



LETTER OF TRANSMITTAL

TO: County of Humboldt
Division of Environmental Health
100 H Street, Suite 100
Eureka, California 95501
Attn: Mark Verhey

DATE: September 1, 2005
JOB NO.: 4731.01
PROJECT: LOP No. 12688
Varsity Ice Cream Facility

TRANSMITTED BY: ☒ Mail ☐ Delivered In Person ☐ Fax

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Description

<u>1</u>	1.	<u>Site Summary and Request for Closure Report</u>
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<u> </u>	3.	<u> </u>
<u> </u>	4.	<u> </u>

REMARKS:

THIS MATERIAL SENT FOR:

☒ As Requested
☐ Approval

☒ Information
☐

cc: Mr. Jim Ely

By:

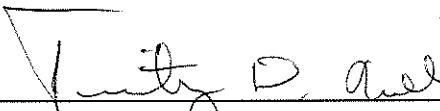
Timothy D. Nelson, P.G.

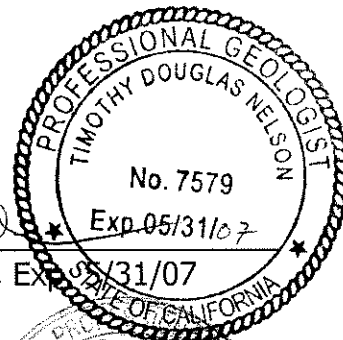
SITE SUMMARY AND REQUEST FOR CLOSURE REPORT

**Varsity Ice Cream Facility
1732 2nd Street
Eureka, California**

LOP No. 12688

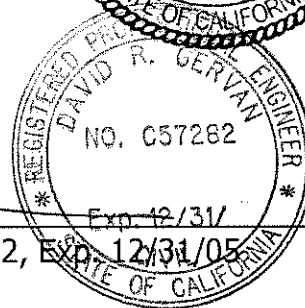
Prepared for:
Mr. Jim Ely
Varsity Ice Cream
1732 2nd Street
Eureka, California


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September 1, 2005
Project No. 4731.01

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SITE SUMMARY AND REQUEST FOR CLOSURE REPORT

Varsity Ice Cream Facility

1732 2nd Street, Eureka, California

LOP No. 12688; LACO ASSOCIATES Project No. 4731.01

EXECUTIVE SUMMARY

The Varsity Ice Cream facility (hereafter referred to as the “site”) is located at 1732 2nd Street in Eureka, California. A site location map is presented as Figure 1. The responsible party for remediation at the site is Mr. Jim Ely. A map illustrating the site’s features including the location of the former underground storage tank (UST) and dispenser is included as Figure 2.

The site was vacant prior to 1950. The site has been used as an ice cream distribution warehouse since 1950. Varsity Ice Cream first occupied the site in 1973, following the Borden Company (1950) and Knudsen Dairy Products (1971). From 1950 to 1968, a single-walled, 550-gallon leaded gasoline UST was operating at the site. The UST operational timeframe indicates that it is unlikely that the low concentrations of methyl tertiary butyl ether (MTBE) detected in one soil sample and two groundwater samples originated from the UST in question. On November 13, 1998, Northcoast Environmental Construction (NEC) removed the UST and approximately 20 yards of contaminated soil to a depth of approximately 5 to 6 feet below ground surface (bgs) in the presence of a representative from the Humboldt County Division of Environmental Health (HCDEH). Collected soil samples indicated low concentrations of total petroleum hydrocarbons as gasoline (TPHg) and total lead. Groundwater was not encountered during the UST removal activities. Presently, there are no active USTs on-site.

In June 1999, LACO installed four hydropunch borings (HP1 through HP4) and discovered groundwater contamination. The details of the UST removal and hydropunch installation are discussed in LACO’s *Initial Investigation Workplan* and *Initial Investigation – Report of Findings*, dated March 5, 1999, and September 2, 1999, respectively.

In January 2001, LACO installed four temporary soil borings (B1-01 through B4-01) and three monitoring wells (MW1 through MW3) to further delineate the extent of the contamination at the

site. The results of the investigation indicated low to moderate concentrations of hydrocarbons were detected in soil and groundwater in the immediate area of the former UST cavity. The work was performed in accordance with LACO's *Subsurface Investigation Workplan*, dated December 1999. The results are summarized in LACO's *Subsurface Investigation Status Report: Report of Findings Boring and Monitoring Well Installation*, dated May 2001.

In October 2002, two direct push borings (B5 and B6) were installed to delineate the extent of the contamination north of the former UST. The work was performed in accordance with LACO's *Supplemental Workplan, Plume Delineation Investigation*, dated August 31, 2001. The results were non-detect for soil and only low concentrations of toluene and xylenes were detected in groundwater. The results are summarized in LACO's *Subsurface Investigation Status Report: Report of Findings Boring Installation*, dated January 2003.

In March 2004, LACO installed 10 temporary soil borings (B7 through B16) to delineate the extent of soil and groundwater contamination, to evaluate the potential for the sanitary sewer line as a preferential pathway, and to determine if there was dissolved lead contamination in the vicinity of the former fuel dispenser. The work was performed in accordance with LACO's *Additional Subsurface Investigation and Interim Remedial Action Workplan (IRAP)*, dated August 2003. The results indicated low to moderate concentrations of petroleum-related contamination in soil and groundwater, but no dissolved lead concentrations. The results are summarized in LACO's *Subsurface Investigation Status Report*, dated April 2004. Additionally, monitoring well MW3 was destroyed by the pressure-grouting method.

In November 2004, the former UST cavity was overexcavated and contaminated material was disposed in accordance with LACO's IRAP. The verification sampling results indicated moderate concentrations in one sample collected along the southern sidewall, where the excavation could not continue because of the presence of the sanitary sewer line. One bottom sample also exhibited low concentrations while all others were reported as non-detect. The results are summarized in accordance with LACO's *Report of Findings for Excavation*, dated February 2005. In February 2005,

replacement monitoring well MW4 was installed and the results have been non-detect for three consecutive sampling events.

The following report provides an overview of the history of the site and work activities to date. A detailed chronological site history is included as Attachment 1. Historical soil and groundwater data are summarized in Tables 1 and 2, respectively. Additionally, quarterly groundwater sampling in the monitoring wells indicates that there is no dissolved-phase plume on site (Tables 3 and 4). Thus, no adverse environmental impacts to potential sensitive receptors in the area are expected. It appears that the majority of the secondary source has been removed from the site. The water quality objectives (WQOs) for TPHg and benzene, toluene, ethylbenzene, and total xylenes (BTEX) in replacement monitoring well MW4 have been met since sampling was initiated in February 2005. Results in all monitoring wells have been reported as non-detect since February 2005. Based on the historical and most recent laboratory analytical results from the site, LACO requests that the HCDEH issue a "No Further Action" status for the site, so our client, Mr. Jim Ely, can receive regulatory closure.

SITE LOCATION

The site is located in a mixed residential and commercial area of Eureka. A site vicinity map is presented as Figure 3. Adjacent properties include H. Dinsmore & Sons Painting and Sandblasting adjacent to the west, Fabcast, Inc. and Apria Healthcare to the north across Second Street, residential properties to the east across S Street, and offices across the alley to the south. According to records at the HCDEH, both Fabcast and Apria are home medical equipment suppliers and have no hazardous materials storage violations or known USTs.

Historically, the area has been occupied primarily by residences since the late 1890s. Minor encroachment of offices and light industrial businesses began in the early 1960s. The Dinsmore & Sons site has been occupied by paint storage and a spray booth since ca. 1964. The Fabcast site had been previously used as a paint center (ca. 1975) and an auto body shop (ca. 1976 to 1984). According to HCDEH records, the nearest leaking UST site is the Gas-N-Go Mini-Mart at 1711 Fourth Street, approximately 500 feet upgradient from Varsity Ice Cream.

Physiographic Setting and Site Geology

The site is in the City of Eureka on a portion of an emergent, Late-Pleistocene marine terrace. Surrounding terrain is generally flat to gently sloping toward the north at less than 10 percent. Approximate elevation of the site is 30 feet NAVD-88 (USGS Eureka, California. 7.5' quadrangle). The site is located approximately 800 feet south of Humboldt Bay. Based on topographic slope, and hydraulic head measurements at the site, groundwater flows northwest to northeast toward the bay (Table 3).

Historic boring logs are included as Attachment 2. The site hydrogeology was evaluated during the excavation activities in November 2004 by reviewing the exposed material in the sidewalls of the excavation to a depth of approximately 11 to feet bgs. Stratigraphic descriptions were performed in the field and noted depths of the units are approximate. The following description was based on the exposure of the south side of the excavation, but all lithologic units appear to be continuous across the site.

Asphalt and road base were encountered from ground surface to approximately 0.6 feet bgs. A thick, black, saturated, highly organic, low-plastic silt or topsoil (OL) was encountered from approximately 0.6 feet to 2.25 feet bgs, and likely represents a former land surface. A thin OL layer was also present from approximately 3.5 to 3.6 feet bgs, and may also represent a short-lived former land surface. An orange/tan, moist to saturated, clayey sand (SC) unit was encountered from approximately 2.25 feet bgs to approximately 8 feet bgs. Brown, moist to saturated, silty sand (SM) and/or poorly graded sand (SP) was present from approximately 8 feet bgs to approximately 10.5 or 11 feet bgs. At approximately 10 to 11 feet bgs, SC was also present. The SM and SC units likely represent lower-energy deposition. From approximately 5 to 5.5 or 6 feet bgs, and from 8 to 10.5 or 11 bgs, the SC and SM units exhibited distinct green-gray petroleum staining and strong petroleum odors. The SC unit was clean at approximately 11 feet bgs in the east-central portion of the cavity, and at approximately 13 feet bgs in the west-central portion of the cavity. The upper zone of contamination could likely be attributed to leaky product plumbing and the lower zone of contamination could be attributed to the same, and/or leaks in the UST. Fluctuating seasonal water tables likely mobilized sorbed-phase contaminants. Several heavy iron bands and orange iron staining were encountered in

the subsurface that likely represent specific winter high and summer low seasonal elevations within the smear zone. Groundwater was actively seeping into the cavity at approximately 10 to 11 feet bgs during the excavation activities.

Hydraulic Gradient

Depth-to-water (DTW) measurements in the monitoring wells observed during the most recent sampling event (August 3, 2005) ranged between 8.25 and 8.52 feet. Groundwater monitoring reports completed to date indicate hydraulic gradient directions varying from N45°W to N18°E. The slopes varied from 0.1 to 3.67 percent, as calculated using the three-point method in the area defined by monitoring wells MW1, MW2, and MW3 (before monitoring well MW3 was destroyed), and monitoring wells MW1, MW2, and MW4 (after monitoring well MW3 was destroyed). Historic hydraulic gradient data is presented as Table 3.

UST CLOSURE AND SAMPLING

From 1950 to 1968, a single-walled, steel, 550-gallon gasoline UST was operating at the site. According to an unauthorized release form the UST was last used in 1968, and was 35 years old. On November 13, 1998, NEC removed the UST and approximately 20 yards of contaminated soil to a depth of approximately 6.5 feet bgs (Figure 2). Field notes prepared by the HCDEH stated approximately 400 gallons of water was pumped out of the UST prior to removal. In addition, several holes up to 0.5 inches wide and 2 inches long were observed in the UST. Impacted soil from the excavation was stockpiled on site. Product piping was closed in place by rinsing and filling with cement. The tank and vent piping were transported to Hansen's Wire Rope in Alton for recycling. The HCDEH field notes indicated that there was a zone of staining in the cavity from approximately 4.5 to 5.5 feet below grade.

The soil surrounding the former UST was sampled on November 13, 1998, by NEC. Low concentrations of TPHg (0.008 µg/g and 0.076 µg/g) were detected in soil from the UST cavity. The piping and dispenser samples did not contain detectable concentrations of TPHg. Lead was detected in the cavity and below the piping in concentrations which likely represent background levels (0.0059, 0.016, and 0.029 µg/g). The sample below the dispenser contained 0.4 µg/kg lead. BTEX

and MTBE were not detected in any of the samples. No groundwater was encountered during the UST removal activities.

Summary of Historic Investigations

Fieldwork performed by LACO to evaluate potential soil and groundwater contamination presumed to originate from the former UST includes boring installations in June 1999, January 2001, October 2002, March 2004, and excavation activities in November 2004. A boring location map is presented as Figure 4. Additionally, LACO installed three monitoring wells (MW1 through MW3) in January 2001, destroyed monitoring well MW3 in March 2004, and installed replacement monitoring well MW4 in February 2005. Historic soil and groundwater laboratory analytical results are summarized in Tables 1 and 2. Historic hydraulic gradient data, and well data/groundwater analytical results are summarized in Tables 3 and 4, respectively. Based on the subsurface investigation and quarterly monitoring to date, it appears that concentrations of any remaining petroleum hydrocarbons in soil and groundwater will continue to decline through natural attenuation.

1999 Investigation

June 1992

Four soil/hydropunch borings (HP1 through HP4) were installed in accordance with LACO's *Initial Investigation Workplan* dated March 5, 1999, and the results are summarized in *Initial Investigation – Report of Findings*, dated September 2, 1999. The soil/hydropunch borings were installed to depths of 4.5 and 5 feet where soil samples were collected. The augers were then advanced to 7.5 feet bgs, and the hydropunch was hammered to 11.5 feet bgs. The hydropunch sleeve was retracted exposing the screen from 7.5 feet bgs to 11.5 feet bgs to collect groundwater samples. Borings HP1 and HP4 were installed north and adjacent to the tank cavity, boring HP3 was installed adjacent to the former dispenser, and boring HP2 was installed approximately 30 feet northeast of the tank cavity. Soil was screened with a photoionization detector (PID) and readings indicated 0 ppm of hydrocarbon vapors in soil samples from 4.5 and 5 feet in all borings. Soil and groundwater samples were analyzed for TPHg, BTEX, MTBE, and total lead. Soil samples were reported as non-detect for TPHg, BTEX, and MTBE, and low concentrations of lead were reported (0.0059 µg/g to 0.4 µg/g). Groundwater samples collected from borings HP1, HP2, and HP4 indicated low to moderate detections of TPHg,

BTEX, and MTBE. Boring HP3 was reported as non-detect. Lead in groundwater was reported at concentrations ranging from 73 µg/L to 150 µg/L.

2001 Investigation

January 2001

Four temporary soil borings (B1-01 through B4-01) and three permanent monitoring wells (MW1 through MW3) were installed in accordance with LACO's *Subsurface Investigation Workplan*, dated December 1999. The results are summarized in LACO's *Subsurface Investigation Status Report; Report of Findings: Boring and Monitoring Well Installation*, dated May 2001. These borings were installed further out from the original borings to delineate contamination at the site. Boring B1-01 was installed west of the tank cavity, boring B2-01 was installed northeast of the tank cavity, boring B3-01 was installed in the alley south of the tank cavity, and boring B4-01 was installed north of the site structure. Soil and groundwater samples were analyzed for TPHg, BTEX, and MTBE. Soil samples collected at approximately 5 feet bgs in all borings were reported as non-detect. Contamination was detected in the groundwater sample collected from only boring B3-01 and indicated moderate concentrations of TPHg and low concentrations of ethylbenzene and xylenes. During the installation of monitoring wells MW1 through MW3, soil samples were collected at depths of 8, 8, and 6 feet bgs, respectively. The sample collected from monitoring well MW3 at 6 feet bgs indicated a detection of 150 µg/g.

2002 Investigation

October 2002

Two temporary soil borings (B5 and B6) were installed to delineate soil and groundwater contamination north of the tank cavity. The laboratory analytical results were reported as non-detect for the soil samples collected at four sampling intervals within each boring. Groundwater from the two borings indicated low concentrations of toluene and ethylbenzene. The borings were installed in accordance with LACO's *Supplemental Workplan, Plume Delineation Investigation*, dated August 2001, and the results are summarized in LACO's *Subsurface Investigation Status Report, Report of Findings, Boring Installation*, dated January 2003.

2004 Investigation

March 2004

Ten temporary soil borings (B7 through B16) were installed at the site in accordance with LACO's *Additional Subsurface Investigation and Interim Remedial Action Workplan* (IRAP), dated August 2003. The results of the boring installation portion of the IRAP are summarized in *Subsurface Investigation Status Report*, dated April 2004. Borings B7, B8, and B9 were installed adjacent to the sanitary sewer line to evaluate the potential for the migration of contaminants along a preferential pathway. Borings B7 and B9 were hydropunch samples (groundwater only) and the results were reported as non-detect. The results of boring B8 indicated a low concentration of TPHg in soil and a high concentration TPHg in groundwater. BTEX and MTBE were absent in the soil and groundwater samples in boring B8. Borings B10, B15, and B16 were installed in the vicinity of the former fuel dispenser and samples were analyzed for total (soil) and dissolved (groundwater) lead only; the results were reported as non-detect. Borings B11, B12, B13, and B14 were installed in and around the tank cavity. A high concentration of TPHg and low concentrations of benzene, ethylbenzene, and total xylenes (BEX) and MTBE (not from the UST) in soil were reported for boring B11. A moderate concentration of TPHg and a low concentration of xylenes in groundwater were also reported for boring B11. Low concentrations of ethylbenzene and xylenes were detected in soil for boring B12. A moderate concentration of TPHg and low concentrations of TEX were reported in groundwater for boring B12. A moderate concentration of TPHg in soil was detected in boring B13, with no BTEX or MTBE, and the results of boring B14 were reported as non-detect for all analytes. The results of groundwater samples collected from boring B13 indicated a low concentration of MTBE (not from the UST) with all other analytes being reported as non-detect. The results of the groundwater sample collected from boring B14 indicated non-detect for all analytes.

2004 Excavation Activities

November 2001

The excavation activities at the site were performed in accordance with LACO's IRAP, and the results are summarized in LACO's *Report of Findings for Excavation*, dated February 2005. The following text was paraphrased from the report:

Between September 20 and November 29, 2004, LACO observed the implementation of the approved IRAP. On September 20, 2004, Beacom initiated work by excavating and stockpiling contaminated soil adjacent to the excavated area. During the first day's excavation activities, Beacom encountered a product pipe at 3 feet bgs near the eastern portion of the cavity. To document subsurface conditions encountered along the northern, southern, eastern, and western sidewalls of the excavation cavity, LACO collected samples for photoionization detector (PID) analyses. Results of the PID analyses indicated high concentrations of sorbed-phase contamination. LACO discussed, and the HCDEH approved, extending the limits of the excavation based on elevated PID recordings.

On September 20, 2004, due to the lack of on-site space, Beacom collected soil disposal characterization samples from the cavity walls to determine if the contaminated soil could be "hot loaded" directly to a state-certified facility for disposal. The results of Beacom's disposal characterization samples precluded the disposal of the material at Bio Industries in Red Bluff, California, due to high concentrations of oil and grease. To verify Beacom's results, LACO collected soil samples from the excavated cavity at approximately 5 to 6 feet bgs on October 15, 2004. On November 22, 2004, Beacom resumed excavation activities. After pre-acceptance was received, all excavated soil was transported by Ben's Truck and Equipment (Ben's) to Altamont Landfill for disposal. Excavation activities continued on November 24, 2004, and were completed on November 29, 2004.

Verification Soil Samples

On November 22, 24, and 29, 2004, LACO collected verification soil samples for PID and laboratory analyses at locations within the cavity sidewalls and bottom. To represent the total depth of the excavation cavity and to characterize the two zones of contamination at approximately 5 to 5.5 feet bgs and 8 to 11 feet bgs, samples were taken at 5 and 10 feet bgs from each cavity sidewall. Because the north cavity wall was greater than 20 feet in length, soil verification samples were taken from both the western and eastern portions of the north wall at the above noted depths. Additionally, soil samples were collected from both the western and eastern areas of the cavity bottom to represent the total area of the excavation cavity.

North Coast Laboratories' (NCL's) case narrative commented that the sample South 2-10' does not present a peak pattern consistent with that of gasoline and the reported result represents the amount of material in the gasoline range. NCL also commented that sample Bottom 2-13' appears to be similar to gasoline, but certain peak ratios are not that of a fresh gasoline standard and the reported result represents the amount of material in the gasoline range. These comments are typical of, and indicate that the site contains, older, weathered fuel which is degrading and affecting the gasoline range of molecular weights.

The sample from location South 2-10' (710 µg/g) was directly collected from light and spotty staining within the clayey sand (SC) located at the southwest corner of the cavity. The remaining contamination was not laterally continuous, but consisted of intermittent lenses of staining approximately 3 to 4 inches long by 2 to 3 inches wide and was actively decreasing with distance, as evidenced by a sharp change in the strong color of the soil staining. This small pocket of sorbed contamination could not be removed because of the proximity to the sanitary sewer line. The laboratory report for the sample collected from location Bottom 2-13' indicated low-concentrations of TPHg and BTEX. All other soil verification samples reported ND.

Interpretation of laboratory results from previous and the current investigation suggests a partially degraded secondary source. A lack of benzene and toluene and the presence of low-concentration TPHg and total xylenes support this assertion. The absence of the more mobile and soluble benzene and toluene suggests that enough time has elapsed since release that only the less mobile and soluble hydrocarbons (TPHg and total xylenes) remain sorbed to subsurface materials.

In addition to soil verification samples, a groundwater sample was collected at approximately 10 feet bgs from groundwater that had accumulated in the cavity. Analytical results for sample GW1 reports detection of analytes TPHg and BTEX. NCL's case narrative commented that sample GW1 appears to be similar to gasoline, but certain peak ratios are not that of a fresh gasoline standard and the reported result represents the amount of material in the gasoline range. These comments are typical of, and indicate that site contains, older, weathered fuel which is degrading and affecting the gasoline range of molecular weights. A verification soil and groundwater sample location map indicating the

approximate limits of excavation is presented as Figure 5. Analyte concentrations in verification samples are presented in Figure 6. A concrete and asphalt replacement map is presented as Figure 7. Historic soil and groundwater analytical results are summarized in Tables 1 and 2, respectively.

WATER QUALITY GOALS

Title 22 of the California Code of Regulations outlines domestic water quality and monitoring standards of organic compounds in Section 64431. In the case of TPHg and benzene, WQOs are defined by the practical quantitative limit, or the method detection limit of United States Environmental Protection Agency (USEPA) method 8260 analysis, as the actual water quality objective is lower. WQOs (NCRWQCB, Water Quality Objectives, Region 1) for the contaminants of concern at this site are presented below.

Contaminant of Concern	Water Quality Objective (mg/L)
Benzene	1
Toluene	40
Ethylbenzene	29
Xylenes	20
TPHmo	50
TPHg	50
TPHd	50
MTBE	5

POTENTIAL RECEPTORS

LACO has not conducted a sensitive receptor survey (SRS) for the Varsity Ice Cream site in accordance with the HCDEH as domestic well surveys were conducted for three UST sites in the surrounding area.

There are no ecological sensitive receptors located in the immediate area. However, the Eureka Slough and Humboldt Bay are located approximately 800 feet to the north in the downgradient direction. No other surface water features within 1000-feet were noted in the survey area. Because

the dissolved-phase plume appears to be contained on site and distances to the Slough and Bay are rather significant, there does not appear to be any significant risk for adverse environmental impacts. The area of Eureka located downgradient of the site is serviced by City of Eureka public utilities.

SUMMARY OF MONITORING WELL RESULTS

No detectable contamination in monitoring well MW1 has ever been reported. In November 2001, a low concentration of xylenes was the only detectable contamination reported for monitoring well MW2. Since sampling was initiated in the three monitoring wells in February 2001, high concentrations of TPHg and low to high concentrations of BTEX were reported for monitoring well MW3, located within the former tank cavity. Concentrations of TPHg fluctuated within one order of magnitude, and correlated with DTW with higher concentrations being reported during the dryer summer months. Please refer to Charts 1 and 2 in LACO's *Site Conceptual Model* (dated June 2003) for graphs of TPHg and BTEX, respectively, versus DTW over time. The results of quarterly sampling in monitoring well MW4 for February, May, and August 2005 have been reported as non-detect.

CONCLUSIONS

- It appears that the majority of the secondary source has been removed from the site.
- The WQOs for TPHg and BTEX in replacement monitoring well MW4 have been met since sampling was initiated in February 2005.
- Results in all monitoring wells have been reported as non-detect since February 2005.

RECOMMENDATIONS

Recommendations include the following:

- Based on the historical and most recent laboratory analytical results from the site, LACO requests that the HCDEH issue a "No Further Action" status for the site.

LIMITATIONS

LACO has exercised a standard of care equal to that generated for this industry to ensure that the information contained in this report is current and accurate. LACO disclaims any and all liability for

any errors, omissions, or inaccuracies in the information and data presented in this report, and/or any consequences arising therefrom, whether attributable to inadvertence or otherwise. LACO makes no representations or warranties of any kind, including but not limited to any implied warranties with respect to the accuracy or interpretations of the data furnished. LACO assumes no responsibility of any third party reliance on the data presented and that data generated for this report represents information gathered at that time and at the indicated locations. It should not be utilized by any third party to represent data for any other time or location. It is known that site and subsurface environmental conditions can change with time and under anthropologic influences. This report is valid solely for the purpose, site, and project described in this document. Any alteration, unauthorized distribution, or deviation from this description will invalidate this report.

LIST OF FIGURES, TABLES, AND ATTACHMENTS

Figure 1: Location Map

Figure 2: Site Map

Figure 3: Site Vicinity Map

Figure 4: Boring Location Map

Figure 5: Verification Soil and Groundwater Sample Location Map

Figure 6: Analyte Concentrations in Verification Samples

Figure 7: Concrete and Asphalt Replacement Map

Table 1: Historic Soil Analytical Results

Table 2: Historic Groundwater Analytical Results

Table 3: Historic Hydraulic Gradients

Table 4: Historic Monitoring Well Data and Groundwater Analytical Results

Attachment 1: Chronological Site History

Attachment 2: Historic Boring Logs

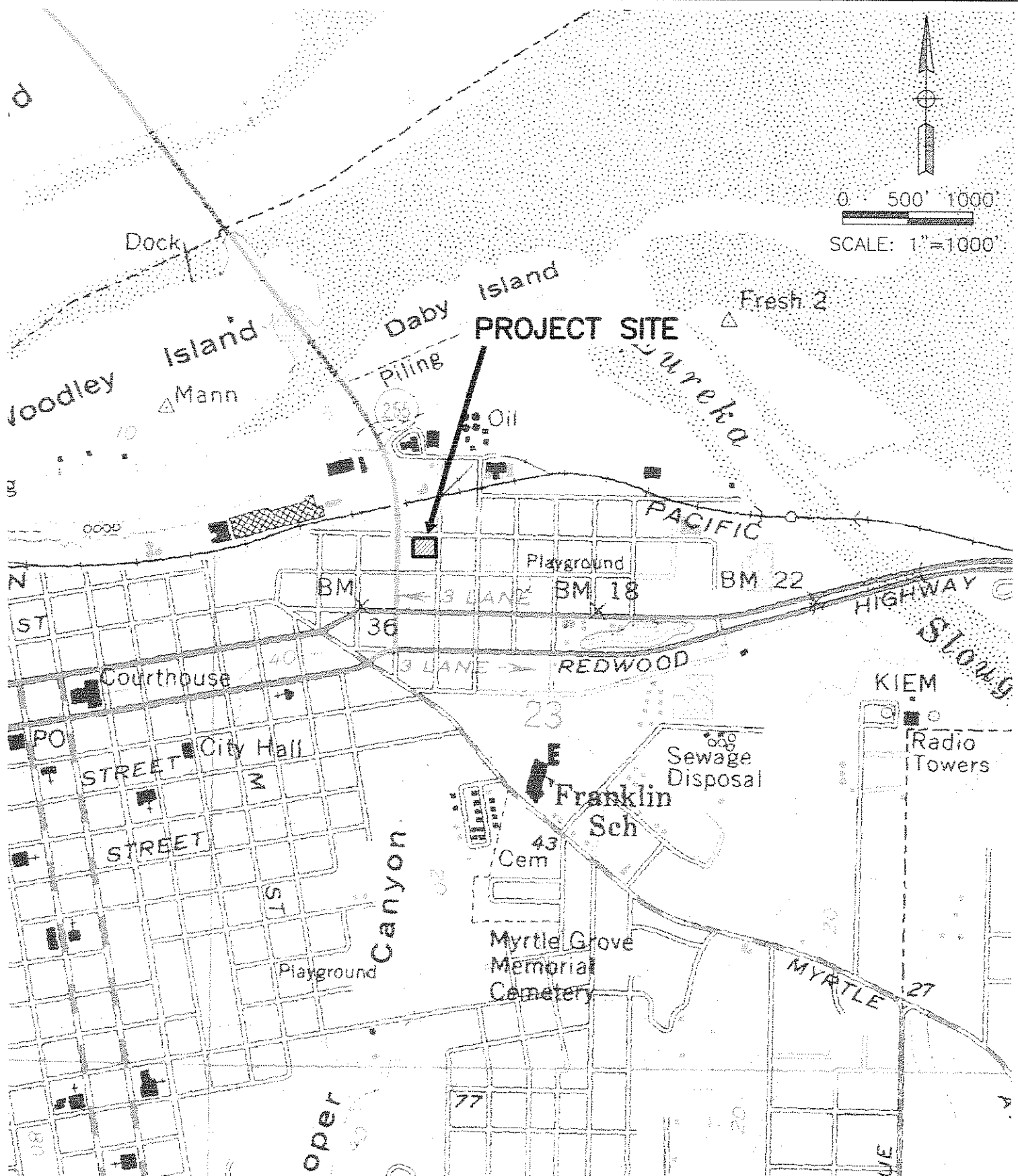
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PROJECT	SITE SUMMARY AND REQUEST FOR CLOSURE REPORT	
CLIENT	VARSITY ICE CREAM	
LOCATION	1732 2nd STREET	
	LOCATION MAP	

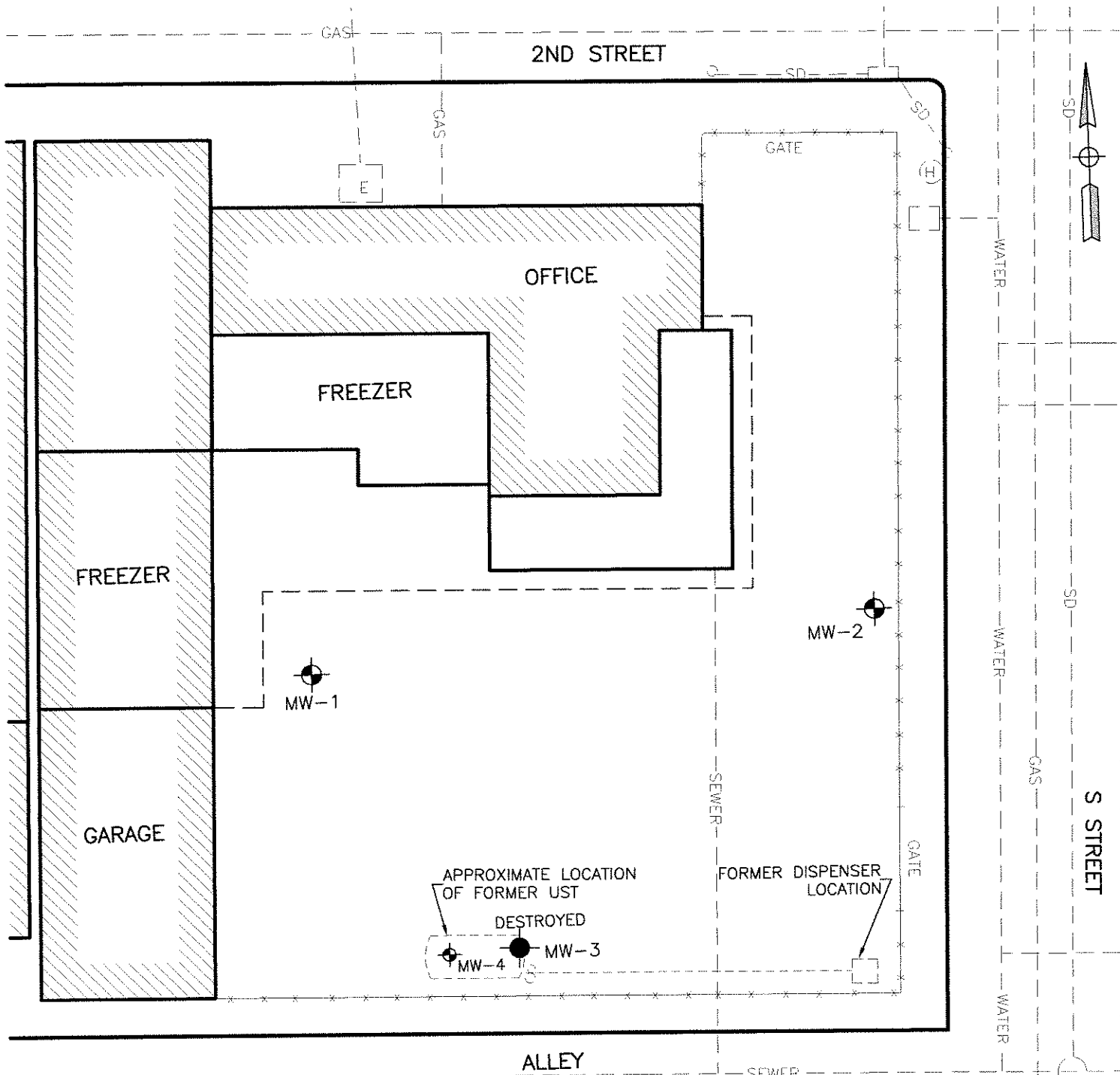
BY	RJM	FIGURE	1
DATE	8/26/05	JOB NO.	4731.01
CHECK			
SCALE	1"=1000'		





LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

PROJECT	SITE SUMMARY AND REQUEST FOR CLOSURE REPORT		BY	RJM	FIGURE	2
CLIENT	VARSITY ICE CREAM		DATE	8/29/05	JOB NO.	4731.01
LOCATION	1732 2nd STREET		CHECK	[initials]		
	SITE MAP		SCALE	1"=20'		



LEGEND

- MONITORING WELL - JANUARY 2001
- MONITORING WELL - DECEMBER 2004
- MONITORING WELL DESTROYED
- FUEL LINES
- FENCE LINE

SEWER FLOW DIRECTION

0' 10' 20'

SCALE: 1"=20'

NOTE: DISTANCES ARE APPROXIMATE

S STREET



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PROJECT SITE SUMMARY AND REQUEST FOR CLOSURE REPORT

BY RJM

FIGURE

CLIENT VARSITY ICE CREAM

DATE 8/29/05

3

LOCATION 1732 2nd STREET

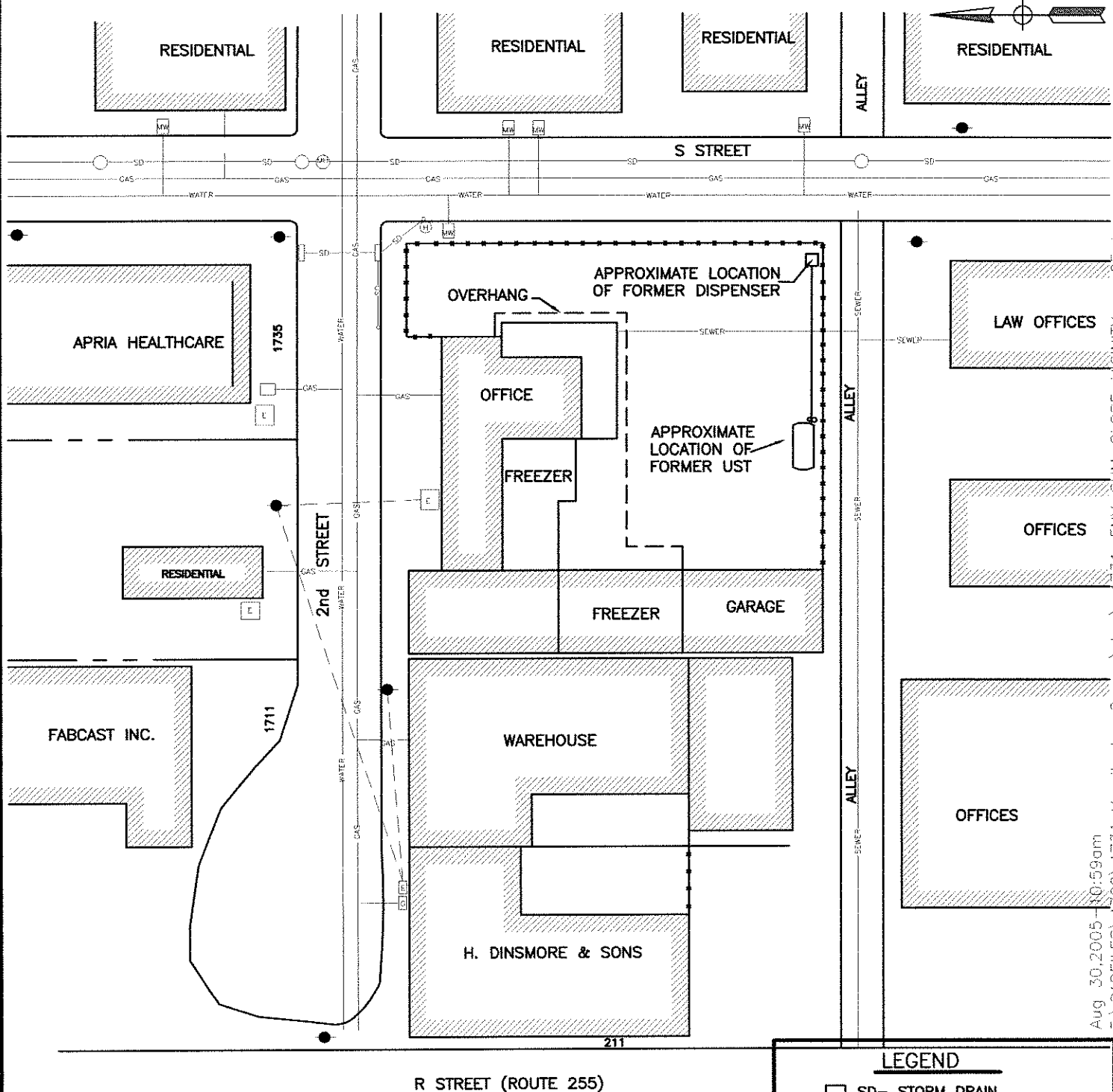
CHECK

JOB NO.

SITE VICINITY MAP

SCALE 1"=40'

4731.01



0' 20' 40'
SCALE: 1"=40'

R STREET (ROUTE 255)

LEGEND

- SD- STORM DRAIN
- FIRE HYDRANT
- POWER POLE
- ELECTRICAL
- WATER METER
- OVERHEAD ELECTRICAL

NOTE: DISTANCES ARE APPROXIMATE

Aug 30 2005 10:59am
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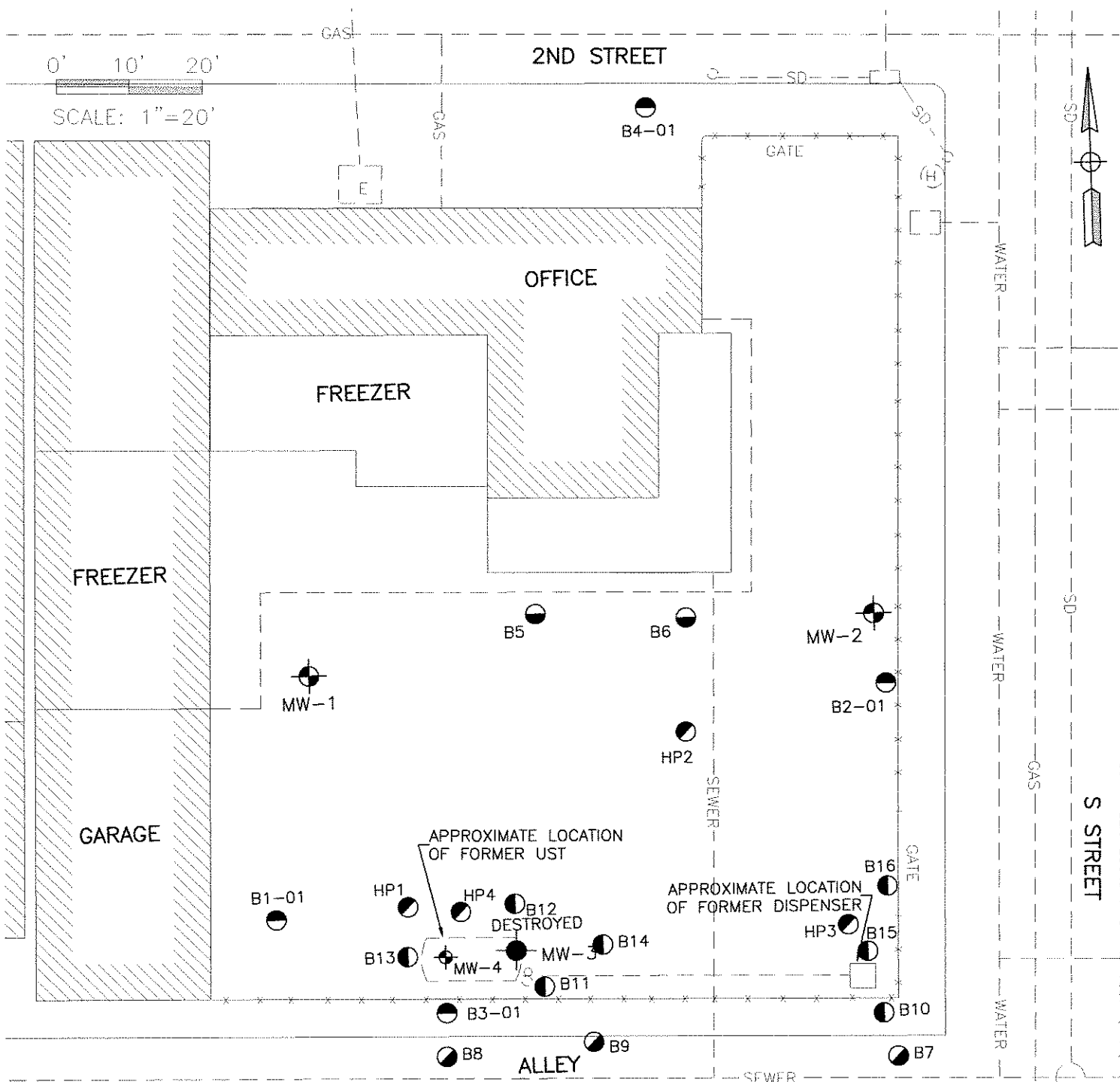


LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

PROJECT SITE SUMMARY AND REQUEST FOR CLOSURE REPORT
CLIENT VARSITY ICE CREAM
LOCATION 1732 2nd STREET
BORING LOCATION MAP

BY RJM
DATE 8/29/05
CHECK [initials]
SCALE 1"=20'

FIGURE 4
JOB NO. 4731.01



LEGEND

- | | |
|---------------------------------|----------------------------------|
| MONITORING WELL - JANUARY 2001 | BORING JANUARY - 2001 |
| MONITORING WELL - DECEMBER 2004 | BORING - OCTOBER 2002 |
| MONITORING WELL DESTROYED | BORING - FEBRUARY 2004 |
| FUEL LINES | HYDOPUNCH BORING - JUNE 1999 |
| FENCE LINE | HYDOPUNCH BORING - FEBRUARY 2004 |

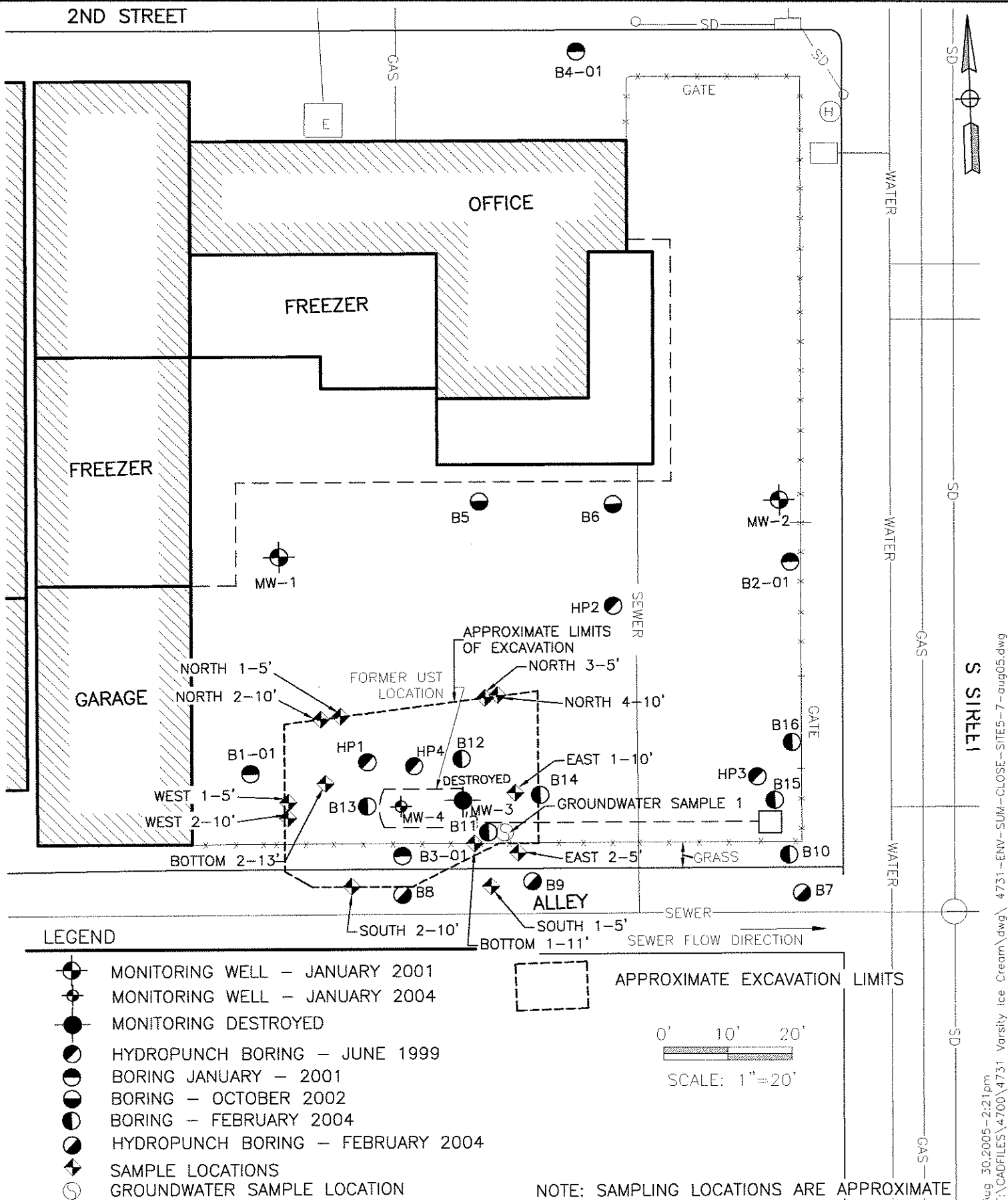
NOTE: BORING LOCATIONS ARE APPROXIMATE

S STREET
Aug 30, 2005 - 11:13am
T:\CADFILES\4700\4731 Varsity Ice Cream\dwg\ 4731-ENV-SUM-CLOSE-SITE-aug05.dwg



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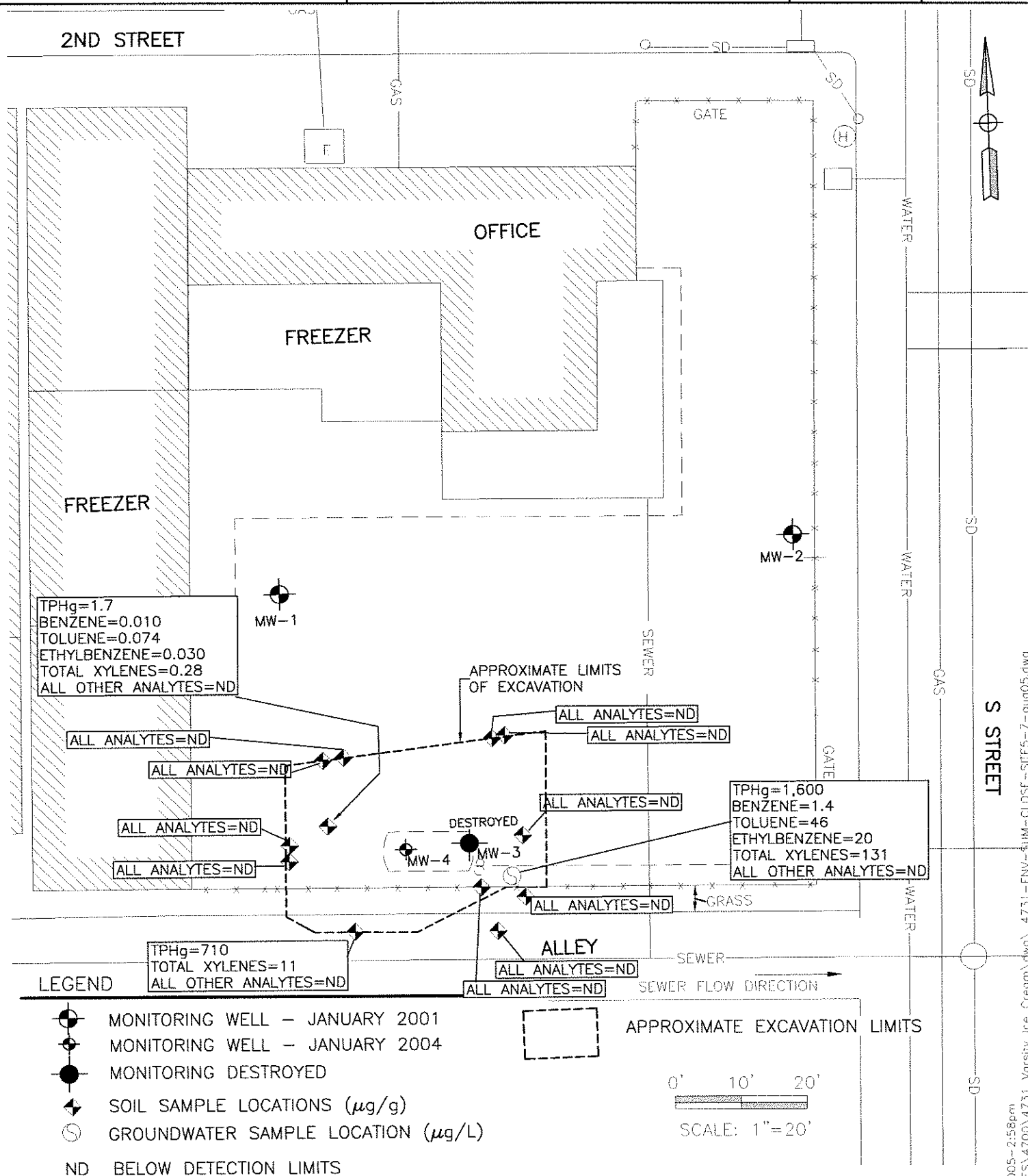
PROJECT	SITE SUMMARY AND REQUEST FOR CLOSURE REPORT	BY	RJM	FIGURE	5
CLIENT	VARSITY ICE CREAM	DATE	8/30/05	JOB NO.	4731.01
LOCATION	1732 2nd STREET	CHECK	[Signature]		
VERIFICATION SOIL AND GROUNDWATER SAMPLE LOCATION MAP		SCALE	1"=20'		





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PROJECT	SITE SUMMARY AND REQUEST FOR CLOSURE REPORT	BY	RJM	FIGURE	6
CLIENT	VARSITY ICE CREAM	DATE	8/30/05	JOB NO.	4731.01
LOCATION	1732 2nd STREET	CHECK	<i>[Signature]</i>		
ANALYTE CONCENTRATIONS IN VERIFICATION SAMPLES		SCALE	1"=20'		

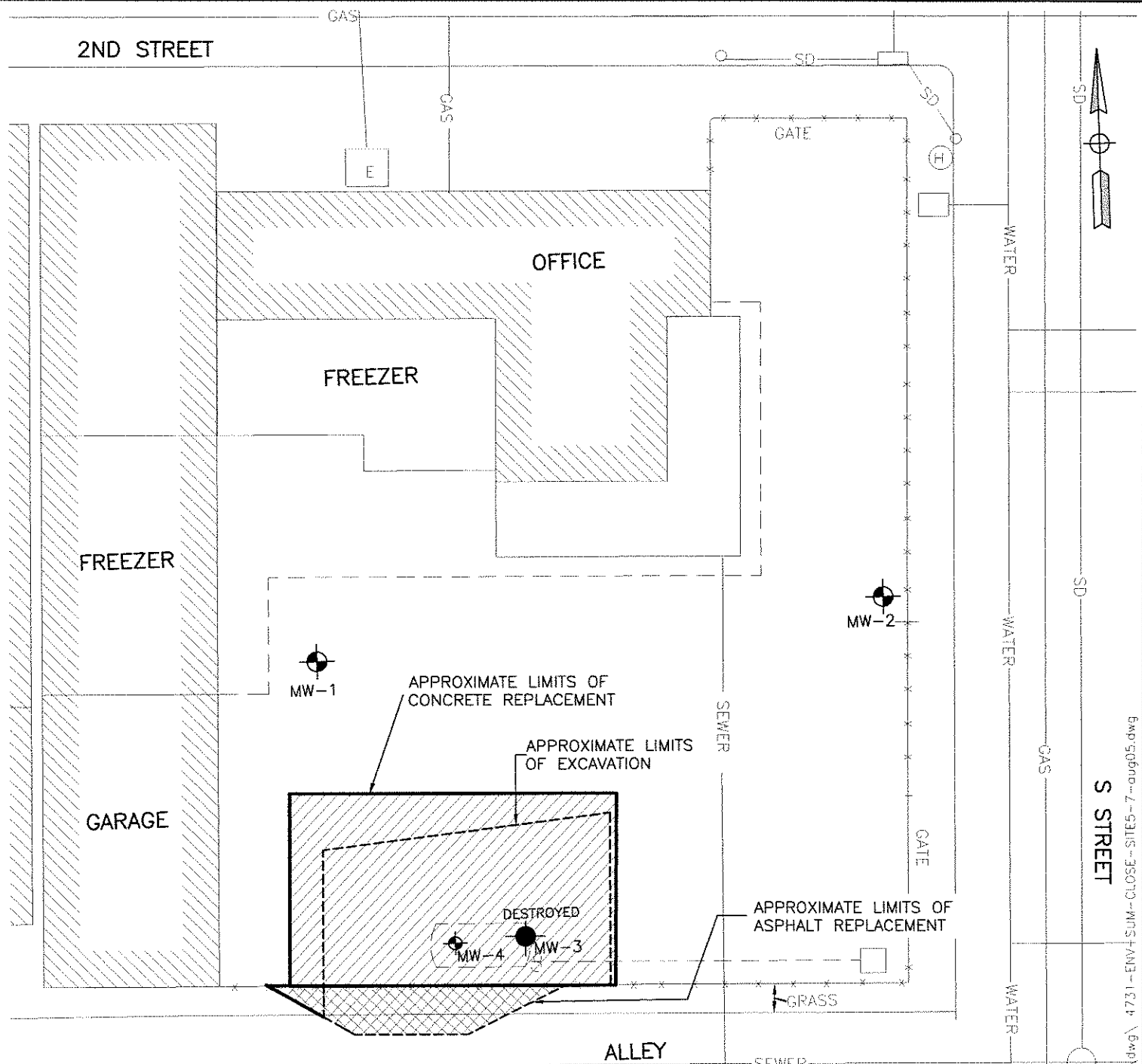


Aug 30, 2005 - 2:58pm
T:\CADFILES\4700\4731 Varsity Ice Cream\dwg\ 4731-ENV-SUM-CLOSE-SITES-7-aug05.dwg



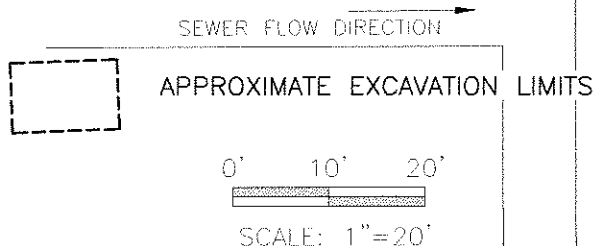
LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

PROJECT	SITE SUMMARY AND REQUEST FOR CLOSURE REPORT	BY	RJM	FIGURE	7
CLIENT	VARSITY ICE CREAM	DATE	8/30/05	JOB NO.	4731.01
LOCATION	1732 2nd STREET	CHECK	<i>[Signature]</i>		
	CONCRETE REPLACEMENT MAP	SCALE	1"=20'		



LEGEND

- MONITORING WELL - JANUARY 2001
- MONITORING WELL - JANUARY 2004
- MONITORING DESTROYED
- APPROXIMATE LIMITS OF CONCRETE REPLACEMENT
- APPROXIMATE LIMITS OF ASPHALT REPLACEMENT



NOTE: LOCATIONS ARE APPROXIMATE

TABLE 1: HISTORIC SOIL LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream
Eureka, CA
LACO No. 4731.00

Sample ID	Sample Date	Depth (feet bgs)	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Lead (µg/g)
1998 UST CLOSURE										
Tank Pit - East	11/13/1998	---	0.076	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	0.0059
Tank Pit - West	11/13/1998	---	0.0088	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	0.016
Piping	11/13/1998	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	0.029
Pump Dispenser	11/13/1998	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	0.4
1999 INVESTIGATION										
HP1 -5	6/28/1999	5	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	0.0037
HP2 -4.5	6/28/1999	4.5	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	0.003
HP3 -5	6/28/1999	5	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	0.0025
HP4 -4.5	6/28/1999	4.5	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	0.0032
2001 INVESTIGATION										
B1-01	1/29/2001	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B2-01	1/29/2001	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B3-01	1/29/2001	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B4-01	1/29/2001	---	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
MW-1 @ 8'	1/30/2001	8	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
MW-2 @ 8'	1/30/2001	8	ND <1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
MW-3 @ 6'	1/30/2001	6	150	---	ND <0.016	ND <0.6	ND <1.0	ND <1.0	ND <0.50	---
2002 INVESTIGATION										
B5-S3.75	10/29/2002	3.75	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B5-S6	10/29/2002	6	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B5-S10	10/29/2002	10	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B5-S16	10/29/2002	16	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B6-S1	10/29/2002	1	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B6-S4	10/29/2002	4	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B6-S6	10/29/2002	6	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B6-S11	10/29/2002	11	ND <1.0	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---

TABLE 1: HISTORIC SOIL LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream
Eureka, CA
LACO No. 4731.00

Sample ID	Sample Date	Depth (feet bgs)	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Lead (µg/g)
2004 INVESTIGATION										
B7	3/2/2004		No soil samples collected							
B8	3/2/2004	7.75	1.6	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B9	3/2/2004		No soil samples collected							
B10	3/2/2004	1.5	---	---	---	---	---	---	---	ND <10
B10	3/2/2004	5	---	---	---	---	---	---	---	ND <10
B11	3/2/2004	5.5	2,300	---	ND <1.6	ND <0.037	17	77	ND <2.5	---
B11	3/2/2004	10	6.3	---	ND <0.005	ND <0.005	0.041	0.22	ND <0.050	---
B11	3/2/2004	16	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B11	3/2/2004	20	ND < 1.0	---	0.027	ND <0.005	ND <0.005	ND <0.005	0.23	---
B12	3/3/2004	4	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B12	3/3/2004	7.75	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B12	3/3/2004	9	ND < 1.0	---	ND <0.005	ND <0.005	0.0051	0.020	ND <0.050	---
B12	3/3/2004	16	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B13	3/3/2004	4	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B13	3/3/2004	8	140	---	ND <0.017	ND <0.30	ND <0.25	ND <0.35-0.7	ND <0.10	---
B13	3/3/2004	10	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B13	3/3/2004	14	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B14	3/3/2004	3.75	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B14	3/3/2004	7.75	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B14	3/3/2004	10.5	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B14	3/3/2004	14	ND < 1.0	---	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.050	---
B15	3/3/2004	2	---	---	---	---	---	---	---	ND <10
B15	3/3/2004	4.5	---	---	---	---	---	---	---	ND <10
B16	3/3/2004	1.75	---	---	---	---	---	---	---	ND <10
B16	3/3/2004	5	---	---	---	---	---	---	---	ND <10

TABLE 1: HISTORIC SOIL LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream

Eureka, CA

LACO No. 4731.00

Sample ID	Sample Date	Depth (feet bgs)	TPHg (µg/g)	TPHd (µg/g)	Benzene (µg/g)	Toluene (µg/g)	Ethylbenzene (µg/g)	Xylenes (µg/g)	MTBE (µg/g)	Lead (µg/g)
2004 EXCAVATION ACTIVITIES										
4731-Bottom 1-S11	11/22/2004	11	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-South 1-S5	11/22/2004	5	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-South 2-S10	11/22/2004	10	710	---	ND<0.0050	ND<0.0050	ND<0.0050	11	ND<0.050	---
4731-West 1-S5	11/24/2004	5	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-West 2-S10	11/24/2004	10	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-North 1-S5	11/24/2004	5	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-East 2-S5	11/29/2004	5	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-Bottom 2-S13	11/29/2004	13	1.7	---	0.01	0.074	0.03	0.28	ND<0.050	---
4731-North 4-S10	11/29/2004	10	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-North 4-S10	11/29/2004	10	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-North 3-S5	11/29/2004	5	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---
4731-East 1-S10	11/29/2004	10	ND<1.0	---	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.050	---

NOTES:

Bold results indicates analyte detection

bgs = below ground surface

HP -5 = hydro-punch soil sample collected at 5 feet bgs

B1-01 = boring number one in 2001

B5-S6 = boring number five -soil sample collected at 6 feet bgs.

ND = not detected at or above the method detection limit shown.

--- = not analyzed or available.

µg/g = micrograms per gram

mg/kg = milligrams per kilogram

TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

MTBE = Methyl tert-butyl ether

TABLE 2: HISTORIC GROUNDWATER LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream

Eureka, CA

LACO No. 4731.00

Boring ID	Depth (feet bgs)	Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Lead (µg/L)
1999 INVESTIGATION										
HP1	---	6/28/1999	360	---	ND<0.50	ND<0.50	2.2	0.55	1.7	73
HP2	---	6/28/1999	740	---	41	3.1	ND<0.50	0.79	ND<0.50-10	150
HP3	---	6/28/1999	ND<100	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50-10	77
HP4	---	6/28/1999	2,600	---	2.4	80	130	430	ND<0.50-10	93
2001 INVESTIGATION										
B1-01	---	1/29/2001	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---
B2-01	---	1/29/2001	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---
B3-01	---	1/29/2001	170	---	ND<0.50	ND<0.50	6.9	18	ND<0.50	---
B4-01	---	1/29/2001	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---
2002 INVESTIGATION										
B5-W12-16	12-16	10/29/2002	ND<50	ND<50	ND<0.50	2.7	ND<0.50	0.90	ND<0.50	ND<10
B6-W10-14	10-14	10/29/2002	ND<50	ND<50	ND<0.50	2.6	ND<0.50	0.90	ND<0.50	ND<10
2004 INVESTIGATION										
B7-W9	grab	3/2/2004	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<3.0	---
B8-W8.75	grab	3/2/2004	1,200	---	ND<5.0	ND<12	ND<5.0	ND<5.0	ND<60	---
B9-W9	grab	3/2/2004	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<3.0	---
B10-W8-10	8-10	3/2/2004	---	---	---	---	---	---	---	ND<50
B11-W12-16	grab	3/2/2004	51	---	ND<0.50	ND<0.50	ND<0.50	0.61	ND<3.0	---
B12-W	grab	3/3/2004	200	---	ND<1.5	1.2	0.8	3.2	ND<8.0	---
B13-W	grab	3/3/2004	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	3.0	---
B14-W	grab	3/3/2004	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<3.0	---
B15-W	8-10	3/3/2004	---	---	---	---	---	---	---	ND<10
B16-W	6-10	3/3/2004	---	---	---	---	---	---	---	ND<10
2004 EXCAVATION ACTIVITIES										
4731-GW1	grab	11/29/2004	1,600	---	1.4	46	20	131	ND<1.0	---

Notes:

Bold results indicates analyte detection

bgs = below ground surface

HP -4 = hydro-punch number four

B1-01 = boring number one in 2001

B5-boring number five

ND = not detected at or above the method detection limit shown.

--- = not analyzed or available.

TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

MTBE = Methyl tert-butyl ether

All results reported in micrograms per liter = µg/L

TABLE 3: HISTORIC HYDRAULIC GRADIENTS

Jim Ely/Varsity Ice Cream; LACO Project No. 4731.00

LOP No. 12688

Historic Hydraulic Gradient			
Date	Technician	Direction	Slope
2/14/2001	DBM	N6W	0.10%
2/22/2001	DBM	N6W	0.30%
3/13/2001	DBM	N6W	0.10%
5/17/2001	DBM	N6W	1.70%
8/24/2001	DBM	N7W	1.50%
9/19/2001	DBM	N16W	1.61%
10/18/2001	DBM	N19W	1.85%
11/30/2001	MCR	N15W	2.24%
12/7/2001	MCR	N29W	3.55%
1/22/2002	MCR	N30W	3.67%
2/25/2002	MCR	N3E	1.69%
5/16/2002	DBM	N9E	1.80%
8/20/2002	JES	S73W	3.71%
12/18/2002	JES	N45W	2.46%
2/24/2003	JES	N3E	1.60%
5/8/2003	MJG	N	1.64%
8/13/2003	MJG	N5E	1.69%
11/14/2003	MJG	N2E	1.48%
2/12/2004	MJG	N5W	1.50%
8/9/2004	SJD	Insufficient Data	
2/7/2005	SJD	N3E	1.9%
5/4/2005	SJD	N3E	1.9%
8/3/2005	RLD	N18E	1.5%

Well head elevation are based on a bench mark; PID #LV0559 from
National Geodetic Survey (NGS) data and established under supervision of a licensed surveyor.

TABLE 4: HISTORIC MONITORING WELL DATA AND LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream; LACO Project No. 4731.00

LOP No. 12688

WELL ID Date	Well Head Elevation (feet, NAVD88)	Depth to Water (feet, NAVD88)	Elevation (feet, NAVD88)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Organic Lead (µg/L)
MW1	29.46									
2/14/2001	7.18		22.28	---	---	---	---	---	---	---
2/22/2001	6.75		22.71	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <10
3/13/2001	7.62		21.84	---	---	---	---	---	---	---
5/17/2001	8.38		21.08	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <10
8/24/2001	9.40		20.06	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <10
9/19/2001	9.79		19.67	---	---	---	---	---	---	---
10/18/2001	10.19		19.27	---	---	---	---	---	---	---
11/30/2001	7.26		22.20	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <0.010
12/7/2001	7.02		22.44	---	---	---	---	---	---	---
1/22/2002	6.58		22.88	---	---	---	---	---	---	---
2/25/2002	5.68		23.78	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <10
5/16/2002	8.06		21.40	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/20/2002	9.27		20.19	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
12/18/2002	6.59		22.87	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/24/2003	6.45		23.01	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/8/2003	6.07		23.39	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/13/2003	9.10		20.36	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
11/14/2003	9.33		20.13	---	---	---	---	---	---	---
2/12/2004	6.65		22.81	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/9/2004	9.38		20.08	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/7/2005	7.28		22.18	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/4/2005	7.32		22.14	---	---	---	---	---	---	---
8/3/2005	8.40		21.06	---	---	---	---	---	---	---

TABLE 4: HISTORIC MONITORING WELL DATA AND LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream; LACO Project No. 4731.00

LOP No. 12688

WELL ID Date	Well Head Elevation (feet, NAVD88)	Depth to Water (feet, NAVD88)	Elevation (feet, NAVD88)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Organic Lead (µg/L)
MW2	28.83									
2/14/2001		6.61	22.22	---	---	---	---	---	---	---
2/22/2001		6.29	22.54	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <10
3/13/2001		7.22	21.61	---	---	---	---	---	---	---
5/17/2001		8.19	20.64	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <10
8/24/2001		8.86	19.97	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <10
9/19/2001		9.05	19.78	---	---	---	---	---	---	---
10/18/2001		9.36	19.47	---	---	---	---	---	---	---
11/30/2001		6.50	22.33	ND <50	ND <0.50	ND <0.50	ND <0.50	0.59	ND <1.0	ND <0.010
12/7/2001		5.53	23.30	---	---	---	---	---	---	---
1/22/2002		4.99	23.84	---	---	---	---	---	---	---
2/25/2002		5.36	23.47	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <10
5/16/2002		7.92	20.91	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/20/2002		5.75	23.08	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
12/18/2002		4.88	23.95	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/24/2003		6.11	22.72	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/8/2003		5.69	23.14	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/13/2003		8.83	20.00	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
11/14/2003		8.95	19.88	---	---	---	---	---	---	---
2/12/2004		6.25	22.58	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/9/2004		9.14	19.69	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/7/2005		6.85	21.98	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/4/2005		6.90	21.93	---	---	---	---	---	---	---
8/3/2005		8.25	20.58	---	---	---	---	---	---	---

TABLE 4: HISTORIC MONITORING WELL DATA AND LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream; LACO Project No. 4731-00

LOP No. 12688

WELL ID	Well Head Elevation (feet, NAVD88)	Depth to Water (feet, NAVD88)	Elevation (feet, NAVD88)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Organic Lead (µg/L)
MW3	29.67									
2/14/2001	6.99		22.68	---	---	---	---	---	---	---
2/22/2001	5.85		23.82	5,700	ND <5.0	81	51	420	ND <5.0	ND <10
3/13/2001	7.37		22.30	---	---	---	---	---	---	---
5/17/2001	8.02		21.65	25,000	33	1,300	520	4,300	ND <13	18
8/24/2001	8.99		20.68	20,000	18	730	410	3,600	ND <1.0	ND <10
9/19/2001	9.30		20.37	---	---	---	---	---	---	---
10/18/2001	9.58		20.09	---	---	---	---	---	---	---
11/30/2001	6.50		23.17	8,600	2.1	48	36	303	ND <1.0	ND <0.010
12/7/2001	5.59		24.08	---	---	---	---	---	---	---
1/22/2002	5.09		24.58	---	---	---	---	---	---	---
2/25/2002	5.28		24.39	4,100	0.69	11	19	67	ND <1.0	ND <10
5/16/2002	7.69		21.98	11,000	27	450	230	850	ND <1.0	---
8/20/2002	8.90		20.77	19,000	30	920	360	2,200	ND <5.0	---
12/18/2002	5.66		24.01	7,500	2.8	66	62	370	ND <5.0	---
2/24/2003	6.09		23.58	6,500	1.3	39	53	234	ND <1.0	---
5/8/2003	5.67		24.00	4,900	ND <0.50	12	23	70	ND <1.0	---
8/13/2003	8.72		20.95	11,000	23	450	200	940	ND <1.0	---
11/14/2003	9.00		20.67	15,000	10	290	210	970	ND <1.0	---
2/12/2004	6.07		23.60	5,700	1.3	20	39	129	ND <1.0	---
3/3/2004										

Destroyed

TABLE 4: HISTORIC MONITORING WELL DATA AND LABORATORY ANALYTICAL RESULTS

Jim Ely/Varsity Ice Cream; LACO Project No. 4731.00

LOP No. 12688

WELL ID Date	Well Head Elevation (feet, NAVD88)	Depth to Water (feet, NAVD88)	Elevation (feet, NAVD88)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Organic Lead (µg/L)
MW4	30.09									
2/7/2005		7.16	22.93	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/4/2005		7.20	22.89	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <0.50
8/3/2005		8.52	21.57	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	ND <0.50
Travel Blank										
11/30/2001	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/25/2002	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/16/2002	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/20/2002	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
12/18/2002	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/24/2003	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
5/8/2003	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/13/2003	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
11/14/2003	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
2/12/2004	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/9/2004	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---
8/3/2005	---	---	---	ND <50	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <1.0	---

NOTES:

Bold results indicate analyte detection

The reported xylenes concentrations are a total of m,p-xylene and o-xylene.

Groundwater elevation calculated by: Well elevation - Depth to groundwater.

ND = not detected at or above the method detection limit shown.

--- = not analyzed or available.

ug/l = micrograms per liter

TPHg = total petroleum hydrocarbons as gasoline

MTBE = Methyl tert-butyl ether

Results indicated for Organic lead in MW4 are actually for Oil and Grease

Attachment 1

CHRONOLOGICAL SITE HISTORY

- 1950 to 1970:** The site is owned and operated by The Borden Company with services in dairy products. The underground storage tank (UST) is on-site to service delivery trucks.
- 1970 to 1977:** The site is operated by Knudsen Dairy Products.
- 1978:** Varsity Ice Cream operates the site.
- November 13, 1998:** Northcoast Environmental Construction (NEC) removes one 550-gallon UST, fuel dispenser, and piping, and collects soil samples for analysis.
- November 18, 1998:** Letter is issued from the Humboldt County Division of Environmental Health (HCDEH) to Jim Ely (site owner) indicating the discovery of contaminated soil or groundwater at (or adjacent to) the Varsity Ice Cream site. HCDEH requests further action to determine the threat and/or impact to groundwater.
- February, 18, 1999:** Letter is issued to the HCDEH regarding Jim Ely retaining LACO ASSOCIATES (LACO).
- March 5, 1999:** LACO submits *Initial Investigation Workplan*.
- May 7, 1999:** Letter is issued from the HCDEH responding to *Initial Investigation Workplan*.
- May 7, 1999:** Letter is issued from the HCDEH to Jim Ely indicating approval of LACO's *Initial Investigation Workplan*. The workplan is approved with the understanding that additional borings and temporary well points are installed, groundwater is sampled during low tide and analyzed for fuel oxygenates and lead scavengers, and sampling occurs within the site's contaminated lens.
- June 11, 1999:** Letter is issued to the HCDEH regarding *Schedule and Workplan Amendment*.
- September 2, 1999:** LACO submits *Initial Investigation - Report of Findings*.
- September 8, 1999:** Letter issued from the HCDEH to Jim Ely acknowledging receipt of LACO's *Initial Investigation - Report of Findings*. The HCDEH requests a workplan for complete hydrogeologic assessment by November 8, 1999.
- December 1, 1999:** Letter is issued from the HCDEH to Jim Ely requesting submittal of an overdue workplan by January 3, 2000.
- December 17, 1999:** LACO submits *Subsurface Investigation Workplan*.
- March 9, 2000:** Letter is issued from the HCDEH to Jim Ely approving LACO's *Subsurface Investigation Workplan* with the stipulation that groundwater samples be analyzed for MTBE and the proposed intrinsic bioremediation is appropriate. A workplan implementation schedule is requested by April 10, 2000.
- April 6, 2000:** LACO issues letter to the HCDEH presenting *Schedule and Workplan Amendment* to address the HCDEH requests for sample analyses.
- December 15, 2000:** LACO issues letter to the HCDEH indicating a drilling date.
- May 7, 2001:** LACO submits *Subsurface Investigation Status Report (Report of Findings: Boring and Monitoring Well Installation)* to the HCDEH.

June 15, 2001: Letter is issued from the HCDEH responding to *Subsurface Investigation Status Report – Report of Findings for Boring and Monitoring Well Installation*, requesting a workplan to further delineate the extent of soil and groundwater contamination at the site.

August 31, 2001: LACO issues a letter to the HCDEH presenting *Supplemental Workplan, Plume Delineation Investigation* for the collection of soil and groundwater samples from the borings installed north of the former UST and in the trench backfill along the sewer line.

October 17, 2001: LACO issues a letter to the HCDEH presenting *Third Quarter 2001 Groundwater Monitoring Report (GMR)*.

October 31, 2001: Letter is issued from the HCDEH responding to *Supplemental Workplan, Plume Delineation Investigation*.

January 15, 2002: LACO submits *Second Quarter 2001 GMR* to the HCDEH.

February 8, 2002: LACO issues letter to the HCDEH indicating an anticipated schedule for the implementation of the approved workplan, including preparation of bid requests, permits, and submittal of packet to Underground Storage Tank Cleanup Fund (USTCF). LACO acknowledges requests to analyze soil and groundwater samples for fuel oxygenates and dissolved lead.

February 8, 2002: LACO submits *Request for Bids; Boring Installation to Clear Heart Drilling, Diamond Core Drilling, and Weeks Drilling and Pump*.

February 12, 2002: LACO issues a letter to the HCDEH presenting *Fourth Quarter 2001 GMR*.

April 12, 2002: LACO issues a letter to the HCDEH presenting *First Quarter 2002 GMR*.

July 12, 2002: LACO issues a letter to the HCDEH presenting *Second Quarter 2002 GMR*.

October 11, 2002: LACO issues a letter to the HCDEH presenting *Third Quarter 2002 GMR*.

January 3, 2003: LACO submits *Subsurface Investigation Status Report (Report of Findings: Boring Installation)* to the HCDEH.

February 25, 2003: LACO issues a letter to the HCDEH presenting *Fourth Quarter 2002 GMR*.

March 17, 2003: Letter is issued from the HCDEH to Jim Ely submitting comments and questions concerning LACO's January 3, 2003, *Subsurface Investigation Status Report: Report of Findings*.

March 17, 2003: LACO issues a letter to the HCDEH presenting *First Quarter 2003 GMR*.

April 25, 2003: Letter is issued from the HCDEH responding to *Fourth Quarter 2002 and First Quarter 2003 GMRs*.

June 17, 2003: LACO submits *Site Conceptual Model* to the HCDEH.

July 3, 2003: LACO issues a letter to the HCDEH presenting *Second Quarter 2003 GMR*.

July 22, 2003: Letter is issued from the HCDEH responding to *Site Conceptual Model and Second Quarter 2003 GMR*.

August 5, 2003: LACO submits *Additional Subsurface Investigation and Interim Remedial Action Workplan (IRAP)* to the HCDEH.

August 15, 2003: Letter is issued from the HCDEH responding to *IRAP*.

September 10, 2003: LACO issues a letter to the HCDEH presenting *Third Quarter 2003 GMR*.

September 17, 2003: LACO submits *Request for Bids; Boring Installation* to Vironex and Precision Sampling.

September 19, 2003: Letter is issued from the HCDEH responding to *Third Quarter 2003 GMR*.

October 23, 2003: LACO issues a letter to the HCDEH presenting *Schedule of Implementation* and addressing the HCDEH comments to *IRAP*.

November 3, 2004: Letter is issued from the HCDEH responding to *Schedule of Implementation*.

November 12, 2003: LACO issues a letter to the HCDEH presenting the *Health and Safety Plan* for the *IRAP*.

November 19, 2003: LACO submits *Request for Bids; Monitoring Well Installation* to Vironex and Precision Sampling.

November 28, 2003: LACO submits *Request for Bids; Contaminated Soil Overexcavation* to Albers Construction, Beacom Construction, and Habersstock Construction.

December 11, 2003: LACO issues a letter to the HCDEH presenting *Fourth Quarter 2003 GMR*.

December 19, 2003: Letter is issued from the HCDEH responding to *Fourth Quarter 2003 GMR*.

January 7, 2004: LACO issues a letter notifying the HCDEH of the destruction of monitoring well MW3.

January 26, 2004: Letter is issued from the HCDEH concurring with destruction of monitoring well MW3.

March 25, 2004: LACO issues a letter to the HCDEH presenting *First Quarter 2004 GMR*.

April 7, 2004: Letter is issued from the HCDEH responding to *First Quarter 2004 GMR*.

April 13, 2004: LACO submits *Subsurface Investigation Status Report*.

April 28, 2004: Letter is issued from the HCDEH responding to *Subsurface Investigation Status Report*.

September 20, 2004: LACO issues a letter to the HCDEH presenting *Third Quarter 2004 GMR*.

September 20, 2004: LACO issues a letter to the HCDEH presenting *Extension of Excavation Perimeter*.

September 22, 2004: Letter is issued from the HCDEH approving *Extension of Excavation Perimeter*.

October 1, 2004: Letter is issued from the HCDEH responding to *Third Quarter 2004 GMR*.

October 4, 2004: LACO issues a letter to the HCDEH with replacement signature page for *Third Quarter 2004 GMR*.

October 18, 2004: LACO issues a letter to the client presenting *Notification of Changed Site Conditions Regarding Soil Disposal*.

November 12, 2004: Well permit application for replacement of monitoring well MW3 is submitted.

December 1, 2004: *Laboratory Compaction and Field Density Tests* submitted.

February 15, 2005: LACO submits *Report of Findings for Excavation*.

March 11, 2005: Letter is issued from the HCDEH responding to *Report of Findings for Excavation*.

March 16, 2005: LACO issues a letter to the HCDEH presenting *First Quarter 2005 GMR*.

March 30, 2005: Fax is issued to the HCDEH regarding replacement monitoring well MW4 construction details.

July 18, 2005: LACO issues a letter to the HCDEH presenting *Second Quarter 2005 GMR*.

July 29, 2005: Letter is issued from the HCDEH in response to *Second Quarter 2005 GMR* with instructions to prepare a request for closure request.

September 2005: LACO submits *Site Summary and Request for Closure Report*.

P:\4000\4731 Varsity Ice Cream\Submittals\Reports\Site Summary Request For Closure 2005\4731 Site History.doc

Attachment 2

BORING LOG

Boring No.

HP1

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.00

BORING LOCATION: 1732 SECOND STREET, EUREKA

DATE: 6/28/99

DRILLING METHOD: 6 5/8-inch (OD) POWER RSHA

ELEVATION: 20' (msl)

DRILLER: LACO

LOGGED BY: CJW

DEPTH TO WATER: INITIAL ∇ : 8'

COMPLETION ∇ : 8'

SITE GEOLOGY: QUATERNARY MARINE TERRACE AND DUNE DEPOSITS

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			CONCRETE		
		ML	SILT (TOPSOIL); Black to Dark Brown, loose, moist, organic, 95% silt 5% fine sand. No hydrocarbon odor or staining.		
2		ML	SILT WITH SAND; Light brownish yellow, mottled, loose, moist, 5% silt, 15% fine sand. No hydrocarbon odor or staining.		
		ML	CLAYEY SANDY SILT; Light brownish yellow, mottled, medium dense, moist, 60% fines, 40% fine sand. No hydrocarbon odor or staining.		
4		SM	SILTY SAND; Light reddish brown, mottled, medium dense, moist, 25% silt, 75% fine sand. No hydrocarbon odor or staining. 1 Brass, 1 soil jar. No hydrocarbon odor or staining.	0	
6		SM-SC	CLAYEY SILTY SAND; Gray, mottled, medium dense, wet, 20% fines, 80% fine sand. No hydrocarbon odor or staining.		
8			Halt at 7.5'. No hydrocarbon odor or staining.		
10					
12					
14					

HYDROPUNCH 7.5'-11.5'

BORING LOG

Boring No.

HP2

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.00

BORING LOCATION: 1732 SECOND STREET, EUREKA

DATE: 6/28/99

DRILLING METHOD: 6 5/8-inch (OD) POWER RSHA

ELEVATION: 20' (msl)

DRILLER: LACO

LOGGED BY: CJW

DEPTH TO WATER: INITIAL ∇ : 8'

COMPLETION ∇ : 8'

SITE GEOLOGY: QUATERNARY MARINE TERRACE AND DUNE DEPOSITS

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			CONCRETE		
		ML	SILT (TOPSOIL); Black, loose, moist, 95% silt, 5% fine sand, organic. No hydrocarbon odor or staining.		
2		ML	SANDY SILT; Light brownish yellow, mottled, loose, moist, 80% silt, 20% fine sand. No hydrocarbon odor or staining.		
		ML	SANDY SILT; Light brownish yellow, mottled, medium dense, moist, 60% silt, 40% fine sand. No hydrocarbon odor or staining.		
4		SM	SILTY SAND; Light reddish brown, mottled, medium dense, moist, 15% silt, 85% fine sand. No hydrocarbon odor or staining.		
		SP	POORLY GRADED SAND; Light reddish brown, medium dense, moist-wet, 5% fines, 95% fine sand. No hydrocarbon odor or staining. 1 Brass, 1 soil jar.	0	
8			Halt at 7.5'. No hydrocarbon odor or staining.		
10					
12					
14					

HYDROPUNCH 7.5'-11.5'

BORING LOG

Boring No.

HP3

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.00

BORING LOCATION: 1732 SECOND STREET, EUREKA

DATE: 6/28/99

DRILLING METHOD: 6 5/8-inch (OD) POWER RSHA

ELEVATION: 20' (msl)

DRILLER: LACO

LOGGED BY: CJW

DEPTH TO WATER: INITIAL ∇ : 8'

COMPLETION ∇ : 8'

SITE GEOLOGY: QUATERNARY MARINE TERRACE AND DUNE DEPOSITS

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			CONCRETE		
		ML	SILT (TOPSOIL); Black, loose, moist, organic, 95% silt, 5% fine sand. No hydrocarbon odor or staining.		
2		ML	SANDY SILT; Light brownish yellow, mottled, medium dense, moist, 60% silt, 40% fine sand. No hydrocarbon odor or staining.		
4		SM	SILTY SAND; Light brownish yellow, mottled, medium dense, moist, 15% silt, 85% fine sand. No hydrocarbon odor or staining.		
6		SP	POORLY GRADED SAND; Light reddish brown, moist, medium dense, 5% fines, 95% fine sand. No hydrocarbon odor or staining. 1 Brass, 1 soil jar. No hydrocarbon odor or staining.	0	
		ML	CLAYEY SANDY SILT; Light reddish brown, moist-wet, medium dense, 80% fines, 20% fine sand. No hydrocarbon odor or staining.		
8			Halt at 7.5'. No hydrocarbon odor or staining.		
10					
12					
14					

HYDROPUNCH 7.5'-11.5'

BORING LOG

Boring No.

HP4

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.00

BORING LOCATION: 1732 SECOND STREET, EUREKA

DATE: 6/28/99

DRILLING METHOD: 6 5/8-inch (OD) POWER RSHA

ELEVATION: 20' (msl)

DRILLER: LACO

LOGGED BY: CJW

DEPTH TO WATER: INITIAL ∇ : 8'

COMPLETION ∇ : 8'

SITE GEOLOGY: QUATERNARY MARINE TERRACE AND DUNE DEPOSITS

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			CONCRETE		
		ML	SILT (TOPSOIL); Black to Dark Brown, loose, moist, organic, 95% silt 5% fine sand. No hydrocarbon odor or staining.		
2		ML	SILT WITH SAND; Light brownish yellow, mottled, loose, moist, 5% silt, 15% fine sand. No hydrocarbon odor or staining.		
		ML	CLAYEY SANDY SILT; Light brownish yellow, mottled, medium dense, moist, 60% fines, 40% fine sand. No hydrocarbon odor or staining.		
4					
		SM	SILTY SAND; Light reddish brown, mottled, medium dense, moist, 15% silt, 85% fine sand. No hydrocarbon odor or staining. 1 Brass. 1 soil jar.	0	
6					
		SM-SC	CLAYEY SILTY SAND; Gray, mottled, medium dense, wet, 20% fines, 80% fine sand. No hydrocarbon odor or staining.		
8			Halt at 7.5'. No hydrocarbon odor or staining.		
10					
12					
14					

HYDROPUNCH 7.5'-11.5'

Sheet

4

LACO ASSOCIATES

BORING LOG

Boring No.

B1-01

PROJECT: Varsity Ice Cream

BORING LOCATION: Arcata

DRILLING METHOD: RHSA

DRILLER: Dennis Lake

DEPTH TO WATER > INITIAL ∇ : 8.0 bgs

SITE GEOLOGY: Pleistocene Marine Terrace







PROJECT NO.: 4731.00

DATE: 29 Jan 01

ELEVATION:

LOGGED BY: TDN

COMPLETION ∇ : 8.0 bgs

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Handy result
0			Concrete		
		GM	Silty gravel; Brown, firm, slightly moist,		
		ML	5% clay, 85% silt, slightly plastic, 5% fine sand, 5% fine gravel; No hydrocarbon odor or staining.		
4		SP	Silt; Dark Brown, firm, slightly moist, 5% clay, 90% silt, low plasticity; 5% fine sand No hydrocarbon odor or staining.		
			Sand; Brown, soft, slightly moist, 5% silt, 95% poorly graded sand, No hydrocarbon odor or staining.		
8					
12			Halt at 12.0 feet bgs.		
16					
20					
24					
28					

Core drill through slab; HA to 5 ft bgs; drill to 12 ft bgs; install 3/4" pvc pipe to 12.0 bgs; collect groundwater sample - 8260 List 4 + MTBE

BORING LOG

Boring No.

B2-01

PROJECT: Varsity Ice Cream

PROJECT NO.: 4731.00

BORING LOCATION: Arcata

DATE: 29 Jan 01

DRILLING METHOD: RHSA

ELEVATION:

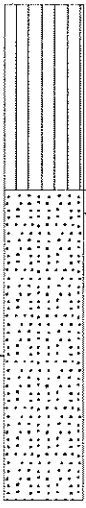
DRILLER: Dennis Lake

LOGGED BY: TDN

DEPTH TO WATER > INITIAL ∇ : 8.0 bgs

COMPLETION ∇ : 8.0 bgs

SITE GEOLOGY: Pleistocene Marine Terrace

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0		ML	Red volcanic rock for landscaping Silt; black, soft, slightly moist, 10% clay, 85% silt, 5% fine sand. No hydrocarbon odor or staining.		
4		SP	Sand; Brown, soft, slightly moist, 5% silt, 10% clay, 85% poorly graded sand, No hydrocarbon odor or staining.		
8			Halt at 11.0 feet bgs.		
12					
16					
20					
24					
28					

Location in planter; HA to 5 ft bgs; drill to 11 ft bgs; install 3/4" pvc pipe to 11.0 bgs; collect groundwater sample - 8260 List 4 + MTBE

BORING LOG

Boring No.

B3-01

PROJECT: Varsity Ice Cream

PROJECT NO.: 4731.00

BORING LOCATION: Arcata

DATE: 29 Jan 01

DRILLING METHOD: RHSA

ELEVATION:

DRILLER: Dennis Lake

LOGGED BY: TDN

DEPTH TO WATER > INITIAL ∇ : 8.0 bgs

COMPLETION ∇ : 8.0 bgs

SITE GEOLOGY: Pleistocene Marine Terrace

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0		ML	Asphalt		
		ML	Silt; Brown, soft, slightly moist, 10% clay, 85% silt, slightly plastic, 5% fine sand. No hydrocarbon odor or staining.		
4		SP	Sand; Brown, soft; slightly moist, 5% clay, 5% silt, 90% poorly graded sand. Hydrocarbon odor and green staining from 5.5 ft to 6.0 ft bgs.		
8					
12			Halt at 12.0 feet bgs.		
16					
20					
24					
28					

Core drill through slab; HA to 5 ft bgs; drill to 12 ft bgs; install 3/4" pvc
pipe to 12.0 bgs; collect groundwater sample - 8260 List 4 + MTBE

BORING LOG

Boring No.

B4-01

PROJECT: Varsity Ice Cream

BORING LOCATION: Arcata

DRILLING METHOD: RHSA

DRILLER: Dennis Lake

DEPTH TO WATER > INITIAL ∇ : 8.0 bgs

SITE GEOLOGY: Pleistocene Marine Terrace


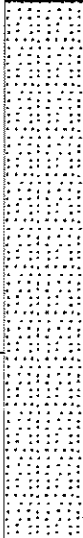

PROJECT NO.: 4731.00

DATE: 29 Jan 01

ELEVATION:

LOGGED BY: TDN

COMPLETION ∇ : 8.0 bgs

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D. ppm	Hanby result
0			Concrete		
		SP	Sand; Brown, soft, slightly moist, 5% silt, 95% well graded sand. No hydrocarbon odor or staining.		
4					
8					
12			Halt at 12.0 feet bgs.		
16					
20					
24					
28					

Core drill through slab; HA to 5 ft bgs; drill to 12 ft bgs; install 3/4" pvc pipe to 12.0 bgs; collect groundwater sample - 8260 List 4 + MTBE

MONITORING WELL LOG

Well No.

MW-1

PROJECT: Varsity Ice Cream

BORING LOCATION: Arcata

DRILLING METHOD: RHSA

DRILLER: Dennis Lake

DEPTH TO WATER> INITIAL ∇ : 8.0' bgs

SITE GEOLOGY: Pleistocene Marine Terrace

WELL CASING:

SEAL AND INTERVAL: 3-4

PROJECT NO.: 4731.00

DATE: 30 Jan 01

ELEVATION:

LOGGED BY: TDN

COMPLETION ∇ : 8.0' bgs

WELL SCREEN AND INTERVAL: 5-15

SAND PACK AND INTERVAL: 4-15

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0			Concrete			
		ML	Silt; Black-Brown; soft; slightly moist; 5% clay, 90% silt, no plasticity, 5% fine sand. No hydrocarbon odor or staining.			
4						
		SP	Sand; Brown; soft; slightly moist; 5% silt, 95% poorly graded sand; No hydrocarbon odor or staining.			
8						
12						
16			Halt at 15.0 bgs.			
20						
24						
28						

Drill through slab; HA to 5 ft bgs; grout 0-3 ft bgs.

MONITORING WELL LOG

Well No.

MW-2

PROJECT: Varsity Ice Cream

BORING LOCATION: Arcata

DRILLING METHOD: RHSA

DRILLER: Dennis Lake

DEPTH TO WATER > INITIAL ∇ : 8.0' bgs

SITE GEOLOGY: Pleistocene Marine Terrace

WELL CASING:

SEAL AND INTERVAL: 3-4

PROJECT NO.: 4731.00

DATE: 30 Jan 01

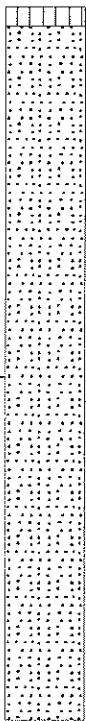
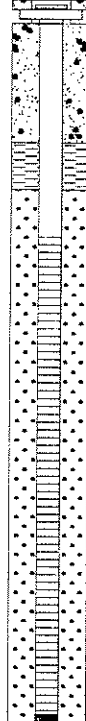
ELEVATION:

LOGGED BY: TDN

COMPLETION ∇ : 8.0' bgs

WELL SCREEN AND INTERVAL: 5-15

SAND PACK AND INTERVAL: 4-15

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Handy Result	Well Construction Diagram
0		ML	Silt; Black; soft; slightly moist; 5% clay, 90% silt, no plasticity, 5% fine sand. No hydrocarbon odor or staining.			
4		SP	Sand; Brown; soft; slightly moist; 5% silt, 95% poorly graded fine sand. No hydrocarbon odor or staining.			
8						
12						
16			Halt at 15.0 bgs.			
20						
24						
28						

*MW located in planter; HA to 5 ft bgs; grout 0-3 ft bgs.
No recovery with push tube, sampled directly from auger.*

MONITORING WELL LOG

Well No.

MW-3

PROJECT: Varsity Ice Cream

PROJECT NO.: 4731.00

BORING LOCATION: Arcata

DATE: 30 Jan 01

DRILLING METHOD: RHSA

ELEVATION:

DRILLER: Dennis Lake

LOGGED BY: TDN

DEPTH TO WATER > INITIAL ∇ : 8.0' bgs

COMPLETION ∇ : 8.0' bgs


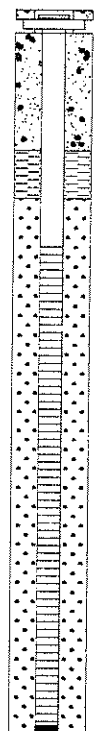


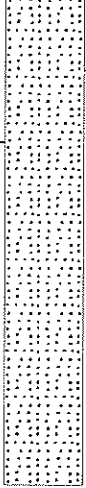

SITE GEOLOGY: Pleistocene Marine Terrace

WELL CASING:

WELL SCREEN AND INTERVAL: 5-15

SEAL AND INTERVAL: 3-4

SAND PACK AND INTERVAL: 4-15

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	Concrete			
			Gravel fill; No hydrocarbon odor or staining.			
4		ML	Silt; Black, soft, slightly moist, 15% poorly graded sand, 10% poorly graded gravel, 75% silt, low plasticity. No hydrocarbon odor or staining.			
		SP	Sand; Brown, soft, slightly moist, 95% poorly graded fine sand, 5% silt; Petroleum odor and green soil staining.			
8						
12						
16			Halt at 15.0 bgs.			
20						
24						
28						

*MW located in former tank cavity; HA to 5 ft bgs; grout 0-3 ft bgs.
No recovery with push tube, sampled directly from auger.*

MONITORING WELL LOG

Well No.

B5

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.01

BORING LOCATION: North former USTs

DATE: 10-29-02

DRILLING METHOD: Direct Push

ELEVATION:

DRILLER: Lakes Well Drilling

LOGGED BY:

DEPTH TO WATER: INITIAL ∇ : 10

COMPLETION ∇ : 10

SITE GEOLOGY: Uplifted Pleistocene Marine Terrace

WELL CASING:

WELL SCREEN AND INTERVAL:

SEAL AND INTERVAL:

SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0			CONCRETE AND GRAVEL BASE			
		ML	SILT WITH SAND; Dark Brown, moist, soft, organics; <5% clay, 70% silt, low plasticity, 25% fine sand, poorly graded. No hydrocarbon odor or staining.			
		SM	SILTY SAND; Orange, loose, moist, iron stains; 20% silt, no plasticity, 65% fine, 10% medium, 5% coarse sand, poorly graded. No hydrocarbon odor or staining.			
2.5						
		SP	POORLY GRADED SAND; Brown with iron stains, loose, moist; 5% silt, 95% fine sand. No hydrocarbon odor or staining.			
5						
		CL	CLAY WITH SAND; Light Gray-Brown, stiff, moist; 70% clay, 5% silt, medium plasticity, 20% fine, 5% medium sand, poorly graded. No hydrocarbon odor or staining.			
7.5						
		SM	SILTY SAND; Brown-Orange, iron stains, loose, moist to wet; 20% silt, no plasticity, 60% fine, 20% medium sand, poorly graded. No hydrocarbon odor or staining.			
10						
12.5						
15		CL	CLAY WITH SAND; Light Gray-Brown, stiff, moist; 70% clay, 5% silt, medium plasticity, 20% fine, 5% medium sand, poorly graded. No hydrocarbon odor or staining.			
		SM	SILTY SAND; Brown-Orange, iron stains, loose, saturated; 20% silt, no plasticity, 60% fine, 20% medium sand, poorly graded. No hydrocarbon odor or staining.			
			Halt at 16 feet bgs.			
17.5						

Soil samples at 3.75, 6, 10, and 16 feet bgs. Screen point sampling interval 12- 16 feet bgs.

Figure _____

MONITORING WELL LOG

Well No.

B6

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.01

BORING LOCATION: North former USTs

DATE: 10-29-02

DRILLING METHOD: Direct Push

ELEVATION:

DRILLER: Lakes Well Drilling

LOGGED BY:

DEPTH TO WATER: INITIAL ∇ : 10

COMPLETION ∇ : 10

SITE GEOLOGY: Uplifted Pleistocene Marine Terrace

WELL CASING:

WELL SCREEN AND INTERVAL:

SEAL AND INTERVAL:

SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0			CONCRETE AND GRAVEL BASE			
		ML	SILT; Dark Brown, moist, soft, organics; <5% clay, 70% silt, low plasticity, 25% fine sand, poorly graded. No hydrocarbon odor or staining.			
		SM	SILTY SAND; Orange, loose, moist, iron stains; 20% silt, no plasticity, 65% fine, 10% medium, 5% coarse sand, poorly graded. No hydrocarbon odor or staining.			
2.5						
		SP	POORLY GRADED SAND; Brown with iron stains, loose, moist; 5% silt, 95% fine sand. No hydrocarbon odor or staining.			
5						
		CL	CLAY WITH SAND; Light Gray-Brown, stiff, moist; 70% clay, 5% silt, medium plasticity, 20% fine, 5% medium sand, poorly graded. No hydrocarbon odor or staining.			
7.5						
		SP-SM	POORLY GRADED SAND WITH SILT; Brown, iron stains, loose, moist to wet; 10% silt, no plasticity, 70% fine, 20% medium sand, poorly graded. No hydrocarbon odor or staining.			
10		SP	POORLY GRADED SAND; Brown, iron stains, loose, saturated; 5% silt, no plasticity, 75% fine, 20% medium sand, poorly graded. No hydrocarbon odor or staining.			
		SP	POORLY GRADED SAND; Gray, iron stains, loose, saturated; <5% silt, no plasticity, 75% fine, 20% medium sand, poorly graded. No hydrocarbon odor or staining. Halt at 12 feet bgs.			
12.5						
15						
17.5						

Soil samples at 1, 4, 6, and 11 feet bgs. Screen point sampling interval 10- 14 feet bgs.

Figure _____

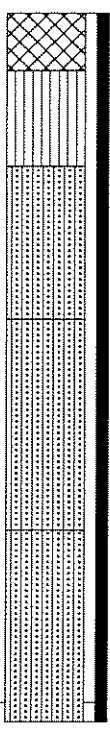
MONITORING WELL LOG

Well No.

B7

PROJECT: VARSITY ICE CREAM
 BORING LOCATION: ALLEY SOUTH OF SITE
 DRILLING METHOD: HAND AUGER
 DRILLER: LACO ASSOCIATES
 DEPTH TO WATER: INITIAL ∇ : 9'
 SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
 WELL CASING:
 SEAL AND INTERVAL:

PROJECT NO.: 4731.01
 DATE: 3/2/04
 ELEVATION: 29 FT (APPROX)
 LOGGED BY:
 COMPLETION ∇ : 9'
 WELL SCREEN AND INTERVAL:
 SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Dark brown, loose, moist, 5% clay, 50% silt, 35% fine to medium sand, 10% fine gravel. Gravel consists of 3/4" aggregate base. No hydrocarbon odor or staining.			
2.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 20% silt, 80% fine to medium sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Dark yellowish brown with common distinct mottles, medium dense, moist, 15% clay, 35% silt, 50% fine sand. No hydrocarbon odor or staining.			
22.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist to wet, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
20			Becomes saturated at 9 feet bgs. Bottom of boring at 9.25 feet bgs. Boring closed with bentonite, grout and cold patch to grade.			
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Grab groundwater sample was collected from the open bore hole at approximately 9 feet bgs with a 3/4-inch diameter disposable polyethylene bailer. No soil samples were collected.

Figure _____


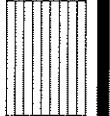
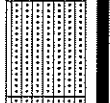
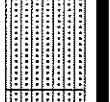
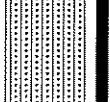

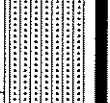

MONITORING WELL LOG

Well No.

B8

PROJECT: VARSITY ICE CREAM
BORING LOCATION: ALLEY SOUTH OF SITE
DRILLING METHOD: HAND AUGER
DRILLER: LACO ASSOCIATES
DEPTH TO WATER: INITIAL ∇ : 8.75'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/2/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 8.75'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Dark brown, loose, moist, 5% clay, 50% silt, 35% fine to medium sand, 10% fine gravel. Gravel consists of 3/4" aggregate base. No hydrocarbon odor or staining.			
2.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 30% silt, 70% fine to medium sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Dark yellowish brown with common distinct mottles, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist to wet, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
22.5		SM	SILTY SAND: Dark yellowish brown, dense, moist, 5% clay, 30% silt, 65% fine sand. No hydrocarbon odor or staining.			
7.5		SM	SILTY SAND: Dark yellowish brown to gray, medium dense, moist to wet, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
20			Strong hydrocarbon odor at 7.75 feet to 9 feet bgs. Becomes saturated at 8.75 feet bgs. Bottom of boring at 9 feet bgs. Boring closed with bentonite, grout and cold patch to grade.			
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Soil sample collected from approximately 7.75 feet bgs. Grab groundwater sample collected from from open bore hole from approximately 9 feet bgs with a 3/4-inch disposable polyethylene bailer.

Figure _____

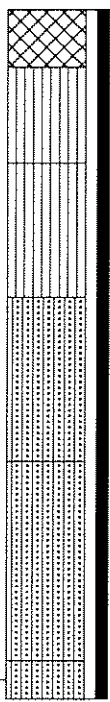
MONITORING WELL LOG

Well No.

B9

PROJECT: VARSITY ICE CREAM
BORING LOCATION: ALLEY SOUTH OF SITE
DRILLING METHOD: HAND AUGER
DRILLER: LACO ASSOCIATES
DEPTH TO WATER: INITIAL ∇ : 8.75'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/2/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 8.75'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Dark brown to black, loose, moist, 5% clay, 50% silt, 35% fine to medium sand, 10% fine gravel. Gravel consists of 3/4" aggregate base. No hydrocarbon odor or staining.			
2.5		ML	SANDY SILT: Gray with light yellowish brown, medium dense, moist, 15% clay, 50% silt, 35% fine sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Dark yellowish brown with common distinct mottles, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
5		SM	SILTY SAND: Dark yellowish brown, dense, moist, 5% clay, 30% silt, 65% fine sand. No hydrocarbon odor or staining.			
22.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist to wet, 20% silt, 80% fine sand. No hydrocarbon odor or staining. Becomes saturated at 8.75 feet bgs. Bottom of boring at 9 feet bgs. Boring closed with bentonite, grout and cold patch to grade.			
7.5						
20						
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Grab groundwater sample collected from open bore hole from approximately 9 feet bgs with a 3/4-inch disposable polyethylene bailer. No soil samples were collected.

Figure _____

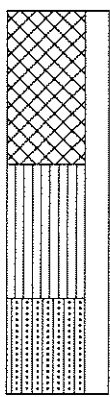
MONITORING WELL LOG

Well No.

B10

PROJECT: VARSITY ICE CREAM
BORING LOCATION: ALLEY SOUTH OF SITE
DRILLING METHOD: DIRECT PUSH
DRILLER: LAKE'S WELL DRILLING
DEPTH TO WATER: INITIAL ∇ : NA
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/2/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : NA
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Dark brown to black, loose, moist, 5% clay, 65% silt, 30% fine to medium sand. No hydrocarbon odor or staining.			
2.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 20% silt, 80% fine sand. No hydrocarbon odor or staining. Bottom of boring at 5 feet bgs in same. Boring was closed with bentonite and grout to 1 foot bgs and topsoil to grade.			
25						
5						
22.5						
7.5						
20						
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Soil samples were collected from 1.5 and 5 feet bgs. Depth discrete groundwater sample was collected from 8 to 10 feet bgs using hydropunch technology.

Figure _____

MONITORING WELL LOG

Well No.

B11

PROJECT: VARSITY ICE CREAM
BORING LOCATION: SE OF FORMER UST CAVITY
DRILLING METHOD: DIRECT PUSH
DRILLER: LAKE'S WELL DRILLING
DEPTH TO WATER: INITIAL ∇ : 10.5'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/2/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 10.5'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5						
2.5						
25		ML SM	SANDY SILT: Dark brown, loose, moist, 5% clay, 65% silt, 30% fine sand. No hydrocarbon odor or staining. SILTY SAND: Gray, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
5		SM	SILTY SAND: Gray with common distinct mottles, medium dense, moist, 15% clay, 35% silt, 50% fine sand. Slight hydrocarbon odor.			
22.5						
7.5		SM	SILTY SAND: Gray, medium dense, moist, 10% clay, 30% silt, 60% fine sand. Strong hydrocarbon odor.			
20						
10		SM	SILTY SAND: Light yellowish brown, medium dense, wet, 30% silt, 70% fine sand. Hydrocarbon odor. Saturated at 10.5 feet bgs			
17.5		SM	SILTY SAND: Light yellowish brown, medium dense, saturated, 20% silt, 80% fine to medium sand. Hydrocarbon odor.			
12.5						
15						
15		SM SM	SILTY SAND: Yellowish brown, medium dense, wet, 10% clay, 30% silt, 60% fine sand. Hydrocarbon odor. SILTY SAND: Yellowish brown, medium dense, saturated, 20% silt, 80% fine to medium sand. Hydrocarbon odor.			
12.5						
17.5						

Soil samples collected from 5.5, 10, and 16 feet bgs. Grab groundwater sample collected using a screen point sampler and PVC tubing equipped with a check valve.

Figure

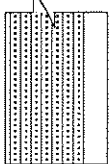
MONITORING WELL LOG

Well No.

B11

PROJECT: VARSITY ICE CREAM
 BORING LOCATION: SE OF FORMER UST CAVITY
 DRILLING METHOD: DIRECT PUSH
 DRILLER: LAKE'S WELL DRILLING
 DEPTH TO WATER: INITIAL ∇ : 10.5'
 SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
 WELL CASING:
 SEAL AND INTERVAL:

PROJECT NO.: 4731.01
 DATE: 3/2/04
 ELEVATION: 29 FT (APPROX)
 LOGGED BY:
 COMPLETION ∇ : 10.5'
 WELL SCREEN AND INTERVAL:
 SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
<div> <div>10</div> <div>20</div> <div>7.5</div> <div>22.5</div> <div>5</div> <div>25</div> <div>2.5</div> <div>27.5</div> <div>0</div> <div>30</div> <div>-2.5</div> <div>32.5</div> <div>-5</div> <div>35</div> </div> 			Bottom of boring at 20 feet bgs in same. Boring closed with bentonite, grout and cold patch to grade.			

Soil samples collected from 5.5, 10, and 16 feet bgs. Grab groundwater sample collected using a screen point sampler and PVC tubing equipped with a check valve.

Figure _____

MONITORING WELL LOG

Well No.

B12

PROJECT: VARSITY ICE CREAM
BORING LOCATION: NE OF FORMER UST CAVITY
DRILLING METHOD: DIRECT PUSH
DRILLER: LAKE'S WELL DRILLING
DEPTH TO WATER: INITIAL ∇ : 8.75'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/3/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 8.75'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5						
2.5		ML	SANDY SILT: Dark brown, loose, moist, 5% clay, 65% silt, 30% fine sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Yellowish brown, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
5						
22.5		SM	SILTY SAND: Gray with common distinct mottles, medium dense, moist, 15% clay, 35% silt, 50% fine sand. Slight hydrocarbon odor.			
7.5						
20		SM	SILTY SAND: Yellowish brown, medium dense, wet to saturated, 20% silt, 80% clay. Slight hydrocarbon odor. Color changes to gray. Slight hydrocarbon odor.			
10			Color changes to brown			
17.5						
12.5						
15		SM	SILTY SAND: Gray, medium dense, saturated, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
15		SM	SILTY SAND: Yellowish brown, medium dense, saturated, 20% silt, 80% fine to medium sand. No hydrocarbon odor or staining.			
12.5			Bottom of boring at 16 feet bgs in same. Boring closed with bentonite and grout to grade.			
17.5						

Soil samples collected from 4, 7.75, 9, and 16 feet bgs. Grab groundwater sample collected using a screen point sampler and PVC tubing equipped with a check valve.

Figure _____

MONITORING WELL LOG

Well No.

B13

PROJECT: VARSITY ICE CREAM
BORING LOCATION: NE OF FORMER UST CAVITY
DRILLING METHOD: DIRECT PUSH
DRILLER: LAKE'S WELL DRILLING
DEPTH TO WATER: INITIAL ∇ : 8.5'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/3/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 8.5'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Black, loose, moist, 5% clay, 65% silt, 30% fine sand. No hydrocarbon odor or staining. Color changes to brown			
2.5		SM	SILTY SAND: Yellowish brown, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Yellowish brown, medium dense, moist, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
5						
22.5		SM	SILTY SAND: Gray with common distinct mottles, medium dense, moist to wet, 15% clay, 35% silt, 50% fine sand. No hydrocarbon odor or staining.			
7.5		SM	SILTY SAND: Yellowish brown, medium dense, wet to saturated, 20% silt, 80% clay. Strong hydrocarbon odor.			
20			No hydrocarbon odor or staining at 10 feet bgs.			
10						
17.5						
12.5						
15						
15						
12.5			Bottom of boring at 16 feet bgs in same. Boring closed with bentonite and grout to grade.			
17.5						

Soil samples collected from 4, 8, 10, and 14 feet bgs. Grab groundwater sample collected using a screen point sampler and PVC tubing equipped with a check valve.

Figure _____

MONITORING WELL LOG

Well No.

B14

PROJECT: VARSITY ICE CREAM
BORING LOCATION: NE OF FORMER UST CAVITY
DRILLING METHOD: DIRECT PUSH
DRILLER: LAKE'S WELL DRILLING
DEPTH TO WATER: INITIAL ∇ : 10.5'
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/3/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : 10.5'
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	ASPHALT AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Black, loose, moist, 5% clay, 65% silt, 30% fine sand. No hydrocarbon odor or staining. Color changes to brown			
2.5		SM	SILTY SAND: Yellowish brown, medium dense, moist, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Yellowish brown, medium dense, moist, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
5						
22.5		SM	SILTY SAND: Gray with common distinct mottles, medium dense, moist to wet, 15% clay, 35% silt, 50% fine sand. No hydrocarbon odor or staining.			
7.5						
20			SILTY SAND: Yellowish brown, medium dense, wet to saturated, 20% silt, 80% clay. No hydrocarbon odor or staining.			
10			Becomes saturated conditions.			
17.5						
12.5						
15						
15		SM	SILTY SAND: Gray, medium dense, saturated, 10% clay, 30% silt, 60% fine sand. No hydrocarbon odor or staining.			
		SM	SILTY SAND: Brown, medium dense, saturated, 20% silt, 80% fine to medium sand. No hydrocarbon odor or staining. Bottom of boring at 16 feet bgs in same. Boring closed with bentonite and grout to grade.			
12.5						
17.5						

Soil samples collected from 3.75, 7.75, 10.5, and 14 feet bgs. Grab groundwater sample collected using a screen point sampler with PVC tubing equipped with a check valve.

Figure _____

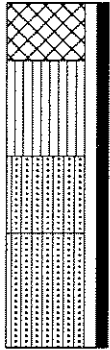
MONITORING WELL LOG

Well No.

B15

PROJECT: VARSITY ICE CREAM
BORING LOCATION: N OF FORMER PUMP ISLAND
DRILLING METHOD: 4" HAND AUGER
DRILLER: LACO ASSOCIATES
DEPTH TO WATER: INITIAL ∇ : NA
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
WELL CASING:
SEAL AND INTERVAL:

PROJECT NO.: 4731.01
DATE: 3/2/04
ELEVATION: 29 FT (APPROX)
LOGGED BY:
COMPLETION ∇ : NA
WELL SCREEN AND INTERVAL:
SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	CONCRETE AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Black, loose, moist, 5% clay, 65% silt, 30% fine to medium sand. No hydrocarbon odor or staining			
2.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 5% clay, 35% silt, 60% fine sand. No hydrocarbon odor or staining.			
25		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 30% silt, 70% fine sand. No hydrocarbon odor or staining.			
5			Bottom of boring at 4.5 feet bgs in same. Boring was closed with bentonite and grout to grade.			
22.5						
7.5						
20						
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Soil samples were collected from 2 and 4.5 feet bgs. Depth discrete groundwater sample was collected from 8 to 10 feet bgs using hydropunch technology.

Figure _____

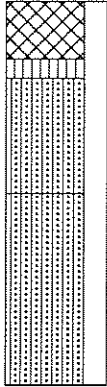
MONITORING WELL LOG

Well No.

B16

PROJECT: VARSITY ICE CREAM
 BORING LOCATION: N OF FORMER PUMP ISLAND
 DRILLING METHOD: DIRECT PUSH
 DRILLER: LAKE'S WELL DRILLING
 DEPTH TO WATER: INITIAL ∇ : NA
 SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE
 WELL CASING:
 SEAL AND INTERVAL:

PROJECT NO.: 4731.01
 DATE: 3/2/04
 ELEVATION: 29 FT (APPROX)
 LOGGED BY:
 COMPLETION ∇ : NA
 WELL SCREEN AND INTERVAL:
 SAND PACK AND INTERVAL:

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Hanby Result	Well Construction Diagram
0		FILL	CONCRETE AND AGGREGATE BASE			
27.5		ML	SANDY SILT: Dark brown, loose, moist, 5% clay, 65% silt, 30% fine to medium sand. No hydrocarbon odor or staining.			
2.5		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 5% clay, 35% silt, 60% fine sand. No hydrocarbon odor or staining			
25		SM	SILTY SAND: Dark yellowish brown, medium dense, moist, 20% silt, 80% fine sand. No hydrocarbon odor or staining.			
5			Bottom of boring at 5 feet bgs in same. Boring was closed with bentonite and grout to grade.			
22.5						
7.5						
20						
10						
17.5						
12.5						
15						
15						
12.5						
17.5						

Soil samples were collected from 1.75 and 5 feet bgs. Depth discrete groundwater sample was collected from 6 to 10 feet bgs using hydropunch technology.

Figure _____

MONITORING WELL LOG

Well No.

MW4

PROJECT: VARSITY ICE CREAM

PROJECT NO.: 4731.01

BORING LOCATION: SOUTH CENTRAL PORTION OF SITE

DATE: 12/13/04

DRILLING METHOD: DIRECT PUSH

ELEVATION: 30.09

DRILLER: LACO

LOGGED BY:

DEPTH TO WATER: INITIAL ∇ : NA

COMPLETION ∇ : NA

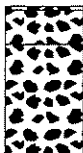
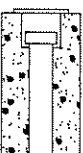
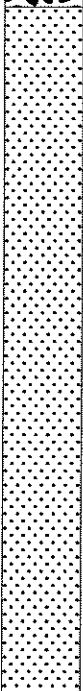
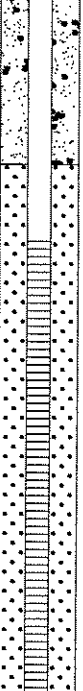
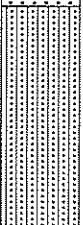


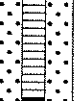
SITE GEOLOGY: UPLIFTED PLEISTOCENE MARINE TERRACE

WELL CASING: 1.5-INCH

WELL SCREEN AND INTERVAL: 0.010-INCH, 5-15 FEET BGS

SEAL AND INTERVAL: CEMENT, 0.5-4 FEET BGS

SAND PACK AND INTERVAL: #2/16, 4-15 FEET BGS

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	P.I.D ppm	Handy Result	Well Construction Diagram
30 0		FILL	CONCRETE AGGREGATE BASE			
27.5 2.5		FILL	PEA GRAVEL			
25 5						
22.5 7.5						
20 10						
17.5 12.5		SM	SILTY SAND: brown, medium dense, wet to saturated, approximately 20% silt, 80% clay.			
15 15		SM SM	SILTY SAND: Gray, medium dense, saturated, approximately 10% clay, 30% silt, 60% fine sand. SILTY SAND: Yellowish brown, medium dense, saturated, approximately 20% silt, 80% fine to medium sand.			
12.5 17.5						

NOTE: This monitoring well was not continuously cored.

The lithology below 11 feet bgs was obtained from boring B12.

Figure 1










KEY TO SYMBOLS








Symbol Description

Symbol Description




Strata symbols

Monitor Well Details



	Paving
	Silt
	Silty sand
	Poorly graded sand
	Low plasticity clay
	Poorly graded sand with silt
	Fill
	Gravel
	EXTRA: medium closely-spaced dots

	flush-mount cover
	recessed cover set in concrete
	concrete seal
	silica sand, blank PVC
	slotted pipe w/ sand
	endcap on pipe packed in sand
	end of well installation

Misc. Symbols

	Water table during drilling
	Water table at boring completion
	Boring continues

Soil Samplers

	Undisturbed thin wall Shelby tube
	Auger

Notes:

1. These logs are subject to the limitations, conclusions, and recommendations in this report.
2. Borings were initially advanced to 4 feet bgs. or rejection with a hand auger.